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Evaluation**

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## **Feasibility Study of Capturing Food Data at Checkout**

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### **FINAL REPORT**

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than 100 retailers) to serve as a test site for a feasibility study—the project planned to collect data from enough stores to account for a substantial portion of all food stamp redemptions by program recipients. After a detailed examination of the FSP-authorized retailers in these 17 counties, FNS selected Georgetown County, South Carolina as the project's study site. Located along South Carolina's eastern coastline, Georgetown County had about 53 FSP-authorized retailers and 2,600 food stamp recipients when it was selected.

The project's planned first phase included recruiting about a dozen retailers to test the feasibility of collecting, merging, and analyzing food stamp scanner data. At the outset, the expected major obstacles included: (1) recruiting retailers for the study; (2) combining scanner files from different retailers together into a consistent format; and (3) merging together information from retailer scanner records, EBT transaction log records, and FSP eligibility file records. In a second, optional phase of the project, as many retailers in the county as possible would be recruited to maximize collected information on the buying patterns of recipients in Georgetown County. For a number of reasons, including financial constraints, the second phase of the study has been dropped from FNS' research agenda. This current report therefore presents the study's final results.

Project staff recruited 11 stores to participate in the project's first phase. Seven of the stores represent two large supermarket chains operating in Georgetown County. The remaining four stores are small grocery or convenience stores that do not use scanners. Special data collection scanning units (DCSUs) were installed in these four stores for the study's data collection period, which ran during September and October 1997.

## **Study Findings and Lessons Learned**

### **Linking Food Stamp Purchase Data to Household Characteristics**

The main finding from this study is that it is indeed possible to collect food purchase data from stores with scanning systems and to link UPC and PLU data from food stamp purchases to information about the food stamp recipient making the purchase. In one of the two supermarket chains participating in the study, scanner data were matched to over 98 percent of EBT transactions; the match rate exceeded 96 percent in the other chain.

With these high match rates, it is possible to examine relationships between recipient and household characteristics and what types and quantities of food items are being purchased with food stamp benefits. For example, the study divided all food stamp households into three groups (households with elderly persons and no children, households with children, and households with neither children nor elderly members) and examined the following differences in how these three groups allocate their food stamp benefits:

- distribution of items across broad food groupings (e.g., meat, produce, dairy);
- distribution of items across detailed food categories (e.g., red meat, poultry, fish);
- distribution of store-brand food items versus national-brand items;
- distribution of milk, sugar, and cereal purchases by product size; and
- distribution of purchased breakfast cereal servings by sugar, iron and fat content.

Actual findings are not summarized here due to the small number of participating stores and the resulting non-generalizability of the collected data.

### **Technical Feasibility of Collecting Data in Stores Without Scanning Systems**

The study also demonstrated that it is difficult to collect information on what is being purchased in stores that do not already use scanner systems. The difficulty is not mainly technical. Although the DCSUs installed for this study encountered a few hardware and software problems that reduced the amount of usable data, these technical problems could be addressed in future implementations. Of greater consequence was the difficulty and/or unwillingness of store employees to use the DCSUs consistently. The DCSUs were simply not used for many transactions at these stores, often because employees said they were too busy to use both the DCSU and their own cash register.

An estimated 26 percent of all food stamp benefits are spent in stores without scanning systems. FNS has three choices for how to handle these stores in any future research efforts involving food purchase data. The first alternative is to exclude such stores, thereby limiting research to purchases made in large grocery stores and supermarkets and, possibly, a few large convenience store chains using scanners. The second option is to wait until more program-authorized stores decide to install scanner systems on their own (or perhaps offer some incentives for them to install scanners). The third is to again test the concept of collecting data with a portable DCSU, but with a redesigned, easier-to-use system that could be substituted temporarily for the retailer's existing cash register.

It is not known whether efforts to collect bar-coded data in non-scanning stores with a reconfigured and easier-to-use DCSU would be more successful. Nevertheless, because there is a policy interest in learning how these stores serve the buying needs of food stamp recipients, it may be worth applying the lessons learned from this first test of the DCSU concept to a second effort. An important lesson from this study is that, if further efforts to collect scanner data with DCSUs are planned, more time needs to be allocated for on-site training and early monitoring of DCSU use than was done for the current study.

### **Recruiting Efforts**

One of the lessons learned early in the study is that FNS cannot expect universal support from state EBT directors in its efforts to link EBT data and recipient information to scanner records. The study found that a small number of EBT directors are philosophically opposed to using information from their EBT systems to examine what food stamp recipients are purchasing with their FSP benefits. At least one other EBT director who was contacted had promised concerned advocates that the EBT system would not be used in this manner.

FNS will not be able to conduct research using scanner data unless food retailers are willing to provide these data to the agency. Furthermore, such research will not be affordable unless retailers are willing to provide the data "at cost" (i.e., for the actual cost to the retailer of copying POS transaction logs and transferring the data to FNS). Thus, obtaining retailer support is crucial for future research efforts using scanner data. With respect to obtaining this support, the study provides a number of lessons:

- It is difficult to get the attention and support of food retailers for a study of this nature. The fact that this was a USDA-sponsored study made little difference as long as store participation was not mandated.
- Despite recruiting difficulties, it is possible to obtain scanner data from some retailers at a reasonable cost. Not all retailers, however, will be willing to provide scanner data on all transactions. Of the two supermarket chains recruited for this study, one agreed to provide data from all transactions, whereas the other provided scanner data only from food stamp purchases.
- Among store chains, support was greatest within supermarkets and weakest within convenience stores. This difference is due, at least in part, to the different levels of scanning experience and knowledge across the two store groups.
- Some stores are simply unwilling to participate voluntarily in **any** government study.
- Even for stores that eventually said they were willing to participate in the study, it was often difficult to obtain this support. Corporate CEOs usually **directed** us to a division manager to discuss the proposed project. These managers were often quite busy and, without a strong directive from the CEO, they had little to gain by talking with study staff about the technical details of their POS system and how to transfer data to the study.
- Food purchase data are quite valuable to marketers, and some store personnel were reluctant to provide scanner data at cost. Somewhat surprisingly, this attitude was less often found among CEOs than their senior managers.

Thus, with regard to retailer participation, the two most important lessons for the future are: (1) it should be possible to recruit a number of stores to provide food purchase data, at least for food stamp purchases, but (2) support will not be anywhere near universal. In areas where one or more reluctant retailers dominate the market, there is little hope that sufficient scanner data can be collected for research purposes.

#### **Data Collection, Preparation, and Analysis**

The study provided several lessons dealing with data collection, data preparation, and analysis:

- Even when stores with scanning systems agree to provide food purchase data, one should anticipate some loss of data due to telecommunications or POS system problems. During the study's two-month data collection period, several days of supermarket data were lost for these reasons.
- Due both to variation among stores in how they organize their host price files and the size of these files, construction of a combined master item file—with detailed and consistent information on every item in store inventories—will be labor intensive. For instance, nearly 34,000 unique items were scanned at the 11 stores in the study, and the master item file needs to provide sufficient information on these items to allow classification into product categories. Nevertheless, without this initial effort, analysis of buying patterns across stores is impossible.

- Once the master item file is constructed, it is necessary to develop a meaningful taxonomy of food products to facilitate analysis. For this study, all food items were first assigned to one of 243 detailed product categories. These 243 detailed categories were then collapsed into 35 summary categories within six main groupings.
- Research using scanner data should focus on the shopping trip as the unit of analysis, because the data are recorded on a transaction-by-transaction basis. Because most food stamp households shop at multiple stores during the month, it may not be possible to obtain their complete food stamp shopping record.
- Nevertheless, detailed information on what food stamp recipients buy with their benefits can be collected and analyzed. Furthermore, variations in buying behavior across subgroups of the food stamp caseload can be examined after demographic information is merged to the scanner data.
- Finally, it is also possible to compare what is being purchased with food stamp benefits to non-food stamp purchases. This analysis cannot be related to household or purchaser characteristics, however, because no information is available on the characteristics of non-food stamp shoppers. The analysis also is possible only when the store is willing to provide scanner data from all transactions.

### **Data Collection Costs**

Little prior evidence is available for estimating the cost of collecting scanner data. Although several companies collect scanner data for market research purposes, no information is available on their cost structures. This study's experience in Georgetown County, however, provides preliminary information on data collection costs related to stores with and without existing scanning systems.

The total cost to collect scanner data from the two participating supermarket chains was about \$79,000, which covered initial retail contacts, contract negotiations, data collection for two months, and initial processing of the files provided by the two chains. On a per-chain basis, the average cost was \$39,500. In thinking about costs for possible future data collection efforts, one should use a somewhat lower figure—about \$30,000 per chain—to account for greater efficiency and the fact that some tasks (e.g., writing programs for data processing) have already been performed. This estimate assumes that, as in the current study, retailers will be willing to provide copies of their scanner data at cost. If future data collection efforts were to last longer than two months, the expected average cost would be perhaps as high as \$35,000 per chain. Most of the costs are for the up-front tasks of retailer recruitment and working out procedures for transfer of data, so lengthening the data collection period should have only a marginal impact on total costs.

To place the \$35,000 per chain cost estimate in context, it is useful to compare it to the cost of a major survey designed to collect data on food shopping patterns, food expenditures, and household food use. The National Food Stamp Program Survey (NFSPS) was conducted in 1996-97. The total cost of the survey was about \$1.7 million. Thus, one could collect scanner data from approximately 50 store chains for about the same price as the NFSPS. With each chain representing an estimated 43 stores, this means that scanner data could be collected from about 2,150 supermarkets for the same price as the NFSPS. Such a sample would represent an estimated 6 percent of all FSP redemptions.

Data collection costs at stores without scanners were much higher, about \$47,000 per individual store, for several reasons. First, the DCSU itself—which included a small computer-based register with keyboard, display screen, and scanner—had to be configured, programmed and installed. Next, project staff had to build a “price file” for each store. (Stores with scanning systems need a datafile that relates UPC and PLU data to item prices, so that the correct price is registered when the item is scanned.) During the feasibility study, project staff used hand-held devices to scan the UPCs and enter the price and description of all items in each store’s inventory. The four non-scanning stores in the study had a combined inventory of about 9,000 items, with surprisingly little overlap in the inventories of the four stores. Finally, project staff visited the four stores each week to download data from the DCSUs and assist store personnel.

### **Representativeness of Scanned Food Purchase Data**

It was not the goal of this feasibility study to collect a **representative sample** of scanner data for analysis. Nevertheless, based on what was learned about recruiting problems and use of DCSUs in non-scanning stores, it is clear that collecting scanner data representing all food stamp purchases will not be possible in the near future. First, as mentioned, an estimated 26 percent of all food stamp redemptions occur in stores lacking scanning systems, so a substantial segment of all redemptions is lost to analysis unless a workable and cost-effective DCSU solution can be found. Second, given the difficulties of encouraging retailers to voluntarily provide their scanner data at cost, it will be very difficult to create a random sample of food purchase data even for FSP redemptions within scanning stores.

The inability of collecting a nationally representative sample of scanner data poses serious limitations on the use of these data for research purposes. It may be possible, however, to collect reasonably representative samples of scanner data in selected market areas (i.e., those in which most or all stores that scan agree to provide their data).

### **Future Research Possibilities**

Despite the difficulties present in trying to obtain a representative sample of scanner data for food stamp purchases, several possible research uses exist for these data. As described below, these research topics include validation of survey methodologies and evaluation of USDA initiatives designed to change food expenditure patterns.

One problem with food expenditure data collected during household surveys is that the accuracy of the collected information is difficult to assess. Errors may arise from respondent recall problems or deliberate efforts to provide misinformation. With the detailed information available in scanner data, it should be possible to design a study to **cross reference scanner data from food stamp purchases** with survey expenditure data from a sample of food stamp households, thereby identifying survey errors. With this information, researchers would have a better understanding of the strengths and limitations of survey expenditure data.

Data that are not representative of events at a single point in time can still provide useful information on temporal changes when gathered at multiple points in time. For instance, scanned food purchase data could be collected at two or more points in time to evaluate the effects of USDA initiatives on food expenditures. Examples of such initiatives might include a nutrition education campaign or an effort to

help food stamp recipients become more price conscious when food shopping. When such initiatives are implemented at the local level, scanner data have clear advantages over survey data for evaluating the impacts of the initiative. First, national survey data generally do not provide sufficient coverage within small areas to support estimation of local-area effects, whereas it is generally easier to collect a high percentage of scanner data within a small area than a large area (because fewer retailers need to be recruited). Second, the marginal cost of collecting scanner data at a second point in time (to provide a pre-post comparison of shopping behavior) should be low for scanner data, whereas survey costs should be about the same for each wave of data collection.

The low marginal cost of collecting scanner data at future points in time suggests other research possibilities. In evaluating the effects of an initiative to change food shopping patterns, collecting scanner data at multiple periods would allow estimation of not only the immediate effects of the initiative, but also any decay in treatment effects. That is, even if food stamp recipients respond to an initiative, one does not necessarily know whether the change in shopping patterns will persist. With scanner data collected at a third point in time, the persistence (or decay) of the effect could be estimated. Collecting scanner data at multiple points (e.g., annually over a 10 to 20 year period) could also allow long-term monitoring of underlying changes in the food shopping patterns of food stamp recipients and other households.

# Chapter 1

## Introduction

The Food and Nutrition Service (FNS) of the U.S. Department of Agriculture (USDA), together with designated state agencies, administers the Food Stamp Program (FSP) and other nutrition assistance programs. The goal of the FSP is to improve the nutritional status of low-income households. The program seeks to achieve this goal by providing to eligible households benefits that are earmarked for the purchase of eligible food items at program-authorized food retail outlets.

In order to understand better the impacts of program participation on diet and nutrition, FNS has relied in part on a series of large surveys. Some of these surveys have measured household expenditures on food, whereas others have focused on food consumption at home, either at the household or individual level.<sup>1</sup> Another possible source of information on food expenditures by food stamp recipients is scanned bar-code information collected by retailers' optical scanning systems. Scanned data on Universal Product Codes (UPCs) and price look-up (PLU) codes, when captured and retained at the individual transaction level, provide detailed information about what was purchased during a grocery shopping trip. To see whether or not scanned food purchase data can be used to help assess the benefit expenditure patterns of food stamp recipients, FNS awarded a contract<sup>2</sup> to Abt Associates Inc. to conduct a feasibility study with the following major objectives:

- Determine the technical feasibility and cost of collecting scanner data from those FSP-authorized stores using point-of-sale (POS) systems with optical scanners.
- Test the feasibility of using portable scanning devices to collect scanner data from program-authorized stores that do not use optical scanners.
- Determine the feasibility of linking scanner data to electronic benefits transfer (EBT) transactions.
- Recruit a sufficient number of FSP retailers in a selected geographic area to provide a representative sample of FSP store types within that area. Install necessary equipment and procedures to collect scanner data from retailers participating in the study.
- Create multi-store analysis files and describe the food purchasing patterns of FSP participants in the selected geographic area. Examine the differences between FSP food purchases and non-FSP purchases for a sample of purchases.
- Identify and compare the relative advantages and disadvantages, including cost, of using survey data and scanner data to investigate policy questions regarding food consumption among FSP participants.

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1 Appendix A presents brief summaries of some of the major surveys providing data on food consumption.

2 "Feasibility Study of Capturing Food Data at Checkout," FNS contract #53-3198-6-029.





available, and some of these surveys collected fairly extensive information about food consumption and purchase. Studies based on survey data, however, have a number of drawbacks, including the expense of collecting the survey data, sampling error, response bias (resulting from sampled respondents who cannot be located or who refuse to participate in the survey), errors in respondent recall of what was purchased or consumed, and deliberate misinformation (as when a respondent says he or she has purchased more fruits and vegetables and fewer snacks and cookies than actually purchased).<sup>6</sup> The agency therefore began looking for a way to capture information at the point of sale about the composition of food baskets purchased with food stamp benefits.

## 1.2 Associated WIC Efforts

FNS' efforts to link EBT data to detailed information about purchased food items have not been limited to the FSP. In 1991, the State of Wyoming, with support from FNS, pilot tested in one county an EBT system for the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). In 1993, the Wyoming EBT WIC demonstration expanded to six counties, including one county where FSP benefits are delivered through the EBT system as well.<sup>7</sup> Wyoming's EBT system, which stores information about WIC and FSP benefits on the card itself, is now expanding statewide. In addition, several other states are preparing to implement EBT systems that can deliver WIC as well as FSP benefits.

The WIC and FSP programs differ in one fundamental way that is important for EBT systems and the ability to identify what participants are purchasing with their program benefits. FSP benefits are issued for a specified dollar amount and may be used only to purchase program-eligible food items, but there is no restriction on which of the tens of thousands of eligible food items participants actually purchase. In contrast, WIC benefits represent a prescription for a specified list and quantity of WIC-approved food items, and the total number of approved food items is relatively small (e.g., about 500 in Wyoming). Due to this programmatic difference, Wyoming and FNS faced a unique problem when designing an EBT system for WIC—the EBT system would need to identify exactly what was being purchased with WIC benefits and compare each item to the participant's food prescription. This was accomplished by storing the food prescription in the memory of the participant's EBT card, a "smartcard" containing an integrated circuit memory chip, and equipping the EBT terminal with a scanner to read the bar codes affixed to food packages.<sup>8</sup> Thus, the WIC Program has demonstrated that it is indeed possible to link EBT transaction data with detailed information on items purchased.

This pioneering effort by the WIC Program, however, requires a specialized EBT system using smartcards that operates quite differently from most food stamp EBT systems. Although EBT systems

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6 A similar problem may exist even when surveys ask respondents to keep register receipts for food purchased during the week. Knowing that his or her food purchase decisions will be examined in a government study, the respondent may modify his or her shopping patterns that week.

7 For a description of the Wyoming demonstration EBT system, see William Hamilton *et al.*, "Evaluation of the Wyoming EBT System for WIC and the Food Stamp Program: Costs and Impacts of the Wyoming Smartcard EBT System," Cambridge, MA, Abt Associates Inc., May 1997.

8 For stores with existing scanning systems, the EBT terminal is connected to the store's system to access an item's bar-code information.

for both programs reimburse retailers for purchased food items in a similar manner, the automatic check of item identifiers is not required by the FSP, and it would be quite difficult and expensive to implement for several reasons. First, whereas the total number of WIC-approved items is relatively small, the number of FSP-eligible items probably exceeds 100,000. Second, there are approximately four times as many FSP-authorized food retailers as WIC retailers. Finally, whereas most WIC retailers are larger grocery stores or supermarkets with existing scanner systems, the majority of FSP-authorized stores do not have scanners. With a technical solution like that used in the WIC Program not feasible for food stamps, FNS is using this current study to examine the feasibility of a different approach to linking scanner and EBT transaction data.

### **1.3 Report Organization**

This report is divided into five chapters, plus several technical appendices. Chapter Two describes the process of selecting a study site and recruiting retailers to participate in the study. The challenging tasks of configuring and installing the DCSUs and collecting data from all eleven participating stores are the subjects of Chapter Three. Chapter Four describes the collected scanner data and the data processing steps required to create final analysis files for the study. Chapter Five presents examples of the types of analyses that are possible with the collected data. Finally, the report ends with a discussion of what has been learned from this study that would facilitate future efforts to collect detailed information on what food stamp recipients are purchasing with their program benefits. Chapter Six also discusses areas of potential research using scanner data.

## Chapter 2

### Selecting a Study Site and Retailer Recruitment

The project faced a series of “recruitment” tasks during the search for an appropriate study site. We first contacted EBT directors in all states whose EBT systems were in operation by early 1997. We continued site exploration activities in a state only if the EBT director indicated his or her support for the project. Second, while investigating numerous sites, CCMI contacted retailers operating in the sites to ascertain the likelihood of their participation if the selected study site included one or more of their stores. Third, once the likely study site had been identified, CCMI sought the retailers’ final agreement to provide data for the study. As it turned out, none of these tasks proved easy. This chapter documents the difficulties faced in eliciting participation in the study.

#### 2.1 Identifying EBT States

One basic site selection criterion was that the site’s FSP recipients had to be receiving their food stamp benefits through an EBT system. Only in an EBT site could the study ultimately attempt to match recipient characteristics to purchased food items. Consequently, the search for a suitable study site began with an inventory of the EBT status of all states.

When our search began in December 1996, 23 states had EBT systems either in operation or about to be implemented. These states are listed in Exhibit 2-1. We sent an introductory letter to the EBT directors in all of the states except one.<sup>1</sup> The letter explained the study, said we were beginning the process of searching for a suitable study site, and asked for an extract of the state’s food stamp authorization file. The plan was to use information from the file about each state’s food stamp caseload, including which data elements were available for use in later analyses, to help select the final site.

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#### Exhibit 2-1

##### States with EBT Systems in December 1996

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Alabama	Iowa	Missouri	Ohio	Texas
Arkansas	Kansas	New Jersey	Oklahoma	Utah
Colorado	Maryland	New Mexico	Pennsylvania	Wyoming
Connecticut	Massachusetts	New York	South Carolina	
Illinois	Minnesota	North Dakota	South Dakota	

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<sup>1</sup> Only Montgomery County in Ohio was using EBT at the time, and the county was too large for consideration as a study site. We therefore did not contact the EBT director in Ohio. Furthermore, North and South Dakota had teamed together for implementation of a single EBT system, so we contacted the EBT director for the joint system.

Of all the states contacted, only six were selected for detailed examination of potential study sites within the state. To avoid collecting data in stores where EBT system problems might cause difficulties, we did not want to select a site where EBT had just recently been implemented. This eliminated nine states from consideration. Several other states were eliminated for various, site-specific reasons. For instance, recipient participation in one state's EBT system was voluntary (Iowa), and in three other states (Illinois, Minnesota, and New Jersey) all the counties that had been converted to EBT were too large for the feasibility study.

In several states, however, the EBT directors simply did not want to participate in the study unless participation was mandated by FNS. Reasons varied. Certainly, state efforts to comply with welfare reform was one factor; the EBT directors voiced concern about their staff not having time to work with us to create an extract of the food stamp authorization file. One director refused, however, because he had specifically promised concerned client groups that the new EBT system would not be used to collect information on purchases. Two other EBT directors refused for similar reasons concerning client privacy.

The number of states with potential study sites was therefore limited to six: Colorado, Kansas, Maryland, New Mexico, South Carolina, and Wyoming.

To summarize, the three main reasons why the remaining states were not selected were:

- The state's EBT system would not be implemented in time for the feasibility study, or it would be operating only in counties that would not be suitable for the study.
- The state EBT directors believed that their staff was too busy with welfare reform to provide any assistance to the study.
- Due to either privacy concerns or general philosophy, the EBT directors were opposed to any attempts to conduct research into how food stamp recipients spend their food stamp benefits.

It is worth noting that, if we were to attempt this study again today, the first factor listed above would be much less limiting; a large number of states implemented EBT systems in 1997. The second factor might still be an issue, although probably less of an issue now than before, because states have a better understanding of how welfare reform is being implemented. The third factor of philosophical opposition would still be an issue in at least some states. If FNS were to attempt to collect scanner data on food stamp purchases nationwide, resistance at the state level would certainly be encountered in some states. There is clearly a belief among some state officials (and, presumably, their constituencies) that collecting information on what recipients buy with their benefits is an invasion of privacy.

## **2.2 Identifying Potential Study Sites**

Within the six states, we used several criteria to narrow the number of potential sites for detailed investigation. First and foremost, we were looking for a site that represented a fairly self-contained shopping area. Although it would not hurt the analysis if recipients from outside the site came in to buy groceries (because they could be identified and excluded from analysis), information on what recipients in the site were buying would be lost if they traveled elsewhere to shop.

Second, we wanted a site with a “medium” number of FSP-authorized stores, somewhere in the range of 30 to 70 stores, to provide diversity in retail environments without exceeding the project’s resources for recruiting stores and collecting data. We also did not want a site with a “dominant” retailer, because that would have reduced the diversity we sought.

Third, we wanted a site with at least 2,000 food stamp households so the analysis would have enough data to examine how shopping decisions vary across different demographic subgroups. There was no specified upper limit on caseload size because the analysis could always be conducted on a sample of recipients. Given the limit on the number of stores, however, it turned out that the largest site selected for further investigation had about 5,700 food stamp households.

Fourth, we were looking for a site with both rural and urbanized areas. We did not want a site that was “too” rural, because we wanted a more heterogeneous group of recipients than typically found in rural areas. We knew, however, that a highly-urbanized site would not match the two criteria of a limited number of stores and a self-contained shopping area. A major metropolitan area would be too big. Although we did consider the possibility that a suitable self-contained shopping area within a metropolitan area might exist, we decided against looking for such an area because of problems of identifying such areas and gathering information at this scale.

Fifth, to the extent possible, we wanted a site where the food stamp caseload represented a demographically diverse group of recipients.

Largely because many pertinent data were easily available at the county level, we decided to use counties as our geographic unit when looking for a study site. Although we recognized that we might modify this decision after a site had been selected (e.g., by adding cross-border stores to the study or by excluding stores in a remote area within the county), using counties as the geographic unit greatly eased the problem of collecting information and identifying the most suitable study sites.

For each county using EBT in the six states, we compiled the following information to aid in our identification of potential study sites:

- Information on county population (1990 Census data)
  - number of residents
  - percent of households with income below the federal poverty level
  - percent of households in different race and ethnicity categories
  - percent of population living in “urbanized” census tracts (as defined by the U.S. Census Bureau)
- Information on FSP-authorized retailers (FNS STARS data)<sup>2</sup>
  - number of retailers, by store type

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2 FNS provided what are known as “EBT-IV” files from the Store Tracking and Redemptions Subsystem (STARS) of the Food Stamp Program Integrated Information System. The six files, one for each state, were provided in February 1997.

- concentration of redemptions in large stores
- number and names of supermarket and convenience store chains represented
- percent of FSP benefits redeemed in convenience stores
- Information on FSP households (state authorization data)
  - number of households
  - percent of FSP benefits spent within county<sup>3</sup>
- Distance to nearest major markets in adjacent counties or states

Based on the above information, we identified 17 counties in five states as potential sites for the study (Exhibit 2-2). Colorado was dropped from the list because EBT had been implemented in only three counties at this point in our search effort. Of the three, one was too small, one was too big, and the third was judged to be too close to a major metropolitan area to serve as a self-contained shopping area. In the other five states, most of the counties that did not make the list were either too small in terms of caseload size or number of retailers, or the county was too close to a major metropolitan area.

## 2.3 Determining Retailers' Willingness to Participate in the Study

The next step was to examine the characteristics of the program-authorized stores in the 17 counties and to ascertain the willingness of county retailers to participate in the study. In stores with existing scanning systems, participation meant that the store would be willing to provide the study with confidential scanner data on items purchased by food stamp customers and others. For stores without scanning systems, participation would require that store employees use a stand-alone "data collection scanning unit" (DCSU) to capture bar-code information on items purchased.

Using information included in the FNS STARS files, we listed all program-authorized retailers operating in each of the 17 counties. Beginning in March 1997, we performed three "pre-contact" activities. We informed FNS regional and field office staff in writing that we were planning to contact retailers in the 17 counties to determine their potential interest in the feasibility study. We also contacted the EBT directors in the five states to let them know we were about to begin contacting retailers. Finally, we spoke with FNS field office staff to obtain their perspective on the retailer community in each county and to elicit their ideas about which retail communities would be more or less likely to be interested in participating. We also used this opportunity to determine whether any of the 17 retail communities were going to be subject to intensive law enforcement activities during the planned data collection period. (We wanted to avoid such areas.) Fortunately, none of the sites had to be eliminated due to planned major investigative efforts.

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3 This information could be tabulated only for counties in Maryland and South Carolina. The Maryland figures were based on EBT transaction data and recipient data collected during a prior study. The South Carolina figures were based on a merge of the state's FSP authorization file with a May 1997 extract of FNS' Anti-Fraud Locator of EBT Retailer Transactions (ALERT) subsystem, which contains EBT transaction data provided by states' EBT vendors.

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**Exhibit 2-2****Potential Study Sites**

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<b>County, State</b>	<b>Major City</b>	<b>Size of FSP Caseload</b>	<b>Number of Retailers</b>
Shawnee County, KS	Topeka	4,000	74
Allegany County, MD	Cumberland	3,549	64
Cecil County, MD	Elkton	2,282	52
Frederick County, MD	Frederick	2,881	67
Chaves County, NM	Roswell	3,929	50
Curry County, NM	Clovis	2,309	41
Eddy County, NM	Carlsbad	2,468	57
Lea County, NM	Hobbs	2,879	54
Santa Fe County, NM	Santa Fe	2,310	55
Beaufort County, SC	Beaufort	2,677	77
Clarendon County, SC	Manning	2,677	77
Colleton County, SC	Jacksonboro	2,136	47
Georgetown County, SC	Georgetown	2,716	58
Greenwood County, SC	Greenwood	1,910	44
Lancaster County, SC	Lancaster	2,128	71
Laurens County, SC	Clinton	2,304	55
Natrona County, WY	Casper	2,156	40

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FSP caseload figures from December 1996 or early 1997. Number of retailers from a February 1997 STARS extract.

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Project staff at CCMI then took the lead in contacting retailers. On March 26, CCMI began mailing letters of introduction to the headquarters of chain stores operating in the selected sites.<sup>4</sup> CCMI started with chain stores for two reasons. First, in many sites, a single chain had multiple stores operating within individual counties. In such cases, it would be difficult to obtain widespread retailer participation in the county without the chain's support. Second, many of the chains operated in more than one of the 17 counties. Thus, discovering that chain's level of support (or non-support) for the study could quickly help identify a "short list" of two or three counties with the best potential to meet the study's objectives.

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<sup>4</sup> See Appendix B for a sample letter.

Determining a chain's potential level of support turned out to be a laborious and time-consuming task. The initial contact letters were typically mailed to the president or chief executive officer of the corporation. CCMI staff then attempted to follow up a week later with a phone call. In many instances, however, the president was well shielded from incoming phone calls, despite the advance letter. Thus, verbal contact often was made only after repeated call-backs spread out over several weeks. In addition, once contact was made, the chain's president often referred CCMI staff to other executive personnel, especially POS or information technology (IT) managers. Typically, this initiated another time-consuming round of placed calls, unanswered voice mail messages, and call-backs.

Because the effort to obtain definitive responses from the chains was taking so long, CCMI continued mailing initial letters to other stores operating in the 17 selected counties. In general, larger stores were targeted first. Because we wanted to test the stand-beside DCSU in non-scanning stores, however, CCMI also sent letters to convenience stores in the belief (which turned out to be correct) that few convenience stores in the sites would have scanners.

Eventually, we had enough information to start narrowing the list of potential study sites, but not until nearly three months had been spent trying to determine stores' willingness to participate. The main lessons learned from this exercise were:

- It was difficult to get the attention and support of chief executive officers for a study of this nature. The fact that this was a USDA-sponsored study made little difference as long as store participation was not mandated.
- Among store chains, support was greatest within supermarkets and weakest within convenience stores. This difference is due, at least in part, to the different levels of scanning experience and knowledge across the two store groups.
- Some stores were simply unwilling to participate voluntarily in any government study. An extreme effect of this was that all counties in one state had to be dropped from consideration because the owners of a large supermarket chain and a large convenience store chain operating throughout the state refused to participate.<sup>5</sup>
- Even for stores that eventually said they would be willing to participate in the study if their county was selected, it was often difficult to obtain this support. As previously mentioned, CEOs would often direct CCMI to a division manager to discuss the proposed project. These managers were often quite busy and, without a strong directive from the CEO, they had little to gain by spending time talking with CCMI about what type of POS systems they had and the technical details of how to transfer data to the study.
- Particularly in the senior support positions (e.g., manager of POS systems), staff turnover seemed to be quite high when CCMI was contacting retailers. CCMI's efforts to follow through on retailer contacts were often delayed when a newly-hired manager said he or she needed some time to get situated before dealing with an outside request for assistance.

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<sup>5</sup> FNS staff in the local field office also warned us that many retailers in the southern part of the state were very leery of government-related activities, and that we would be unlikely to find strong levels of support there. CCMI staff found that this was indeed the case.



- Scanner data are quite valuable to marketers, and some store personnel were reluctant to consider providing such data at cost.<sup>6</sup> Somewhat surprisingly, this attitude was more often found among corporate division managers than CEOs.

## 2.4 Final Site Selection and Retailer Recruitment

By May 1997, the project team had narrowed the number of potential study sites to a handful. A number of sites were dropped from consideration either because they were too close to other shopping opportunities, or major retailers within the site were not interested in participating. CCMI staff visited representatives of two large supermarket chains in May, and they visited with a number of retailers in Georgetown County, South Carolina that same month. CCMI staff then visited stores in Topeka, Kansas (Shawnee County) in June. Much of June and July was spent determining likely retailer cooperation in potential sites in South Carolina and Kansas.

During a conference call on July 22, 1997, and based on information provided by Abt Associates and CCMI, FNS selected Georgetown County, South Carolina as the project's study site. Part of the problem with the Shawnee County site in Kansas was that several major chains there were unwilling to commit their support to the project. As shown in Exhibit 2-3, Georgetown County is located on South Carolina's eastern coast, just south of the Myrtle Beach vacation area (which is located in Horry County). The county's population in 1990 was 46,302. With two small population centers—Georgetown and Pawley's Island—the Census Bureau classifies the county as an urban area with no central place. Exhibit 2-4 shows a map of Georgetown County and surrounding areas.

Census data from 1990 indicate that about 43 percent of Georgetown County's residents are African-American, whereas fewer than 1 percent are Hispanic, American Indian, or Asian. Twenty percent of the county's households live below the federal poverty level. Thirty-five percent of residents live in urban census tracts, mostly along the coast. The FSP caseload in Georgetown County was 2,574 households in July 1997. These households spent approximately 82 percent of their monthly FSP benefits within the county.

Although the number of FSP-authorized food retailers in any location is constantly changing as new stores open, older stores close, and other stores change ownership, there were approximately 53 FSP-authorized food retailers in Georgetown County in March 1997. This retail community included 11 supermarkets, five grocery stores, five specialty stores, 22 convenience stores, and ten stores with other classifications (including six combination grocery/gas stations.)<sup>7</sup> Together, these stores were redeeming approximately \$430,000 in food stamp benefits per month. Nearly 82 percent of the redemptions were

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6 As described later, the study did not have the resources to purchase scanner data at what might be considered their market value. Instead, participating retailers were reimbursed for their expected cost of providing the data to CCMI on a weekly basis throughout the data collection period.

7 Store counts and redemption data are based on EBT transaction data from March 1997, as documented in that month's FNS ALERT file for South Carolina.

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**Exhibit 2-3**

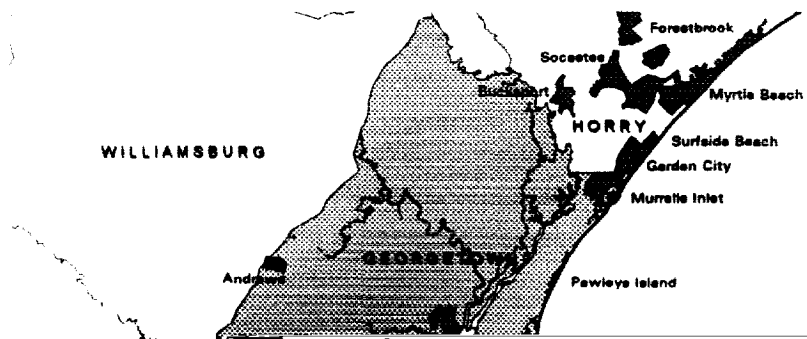
**South Carolina Counties with Georgetown Study Site**



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**Exhibit 2-4**

**Georgetown County, South Carolina**



occurring in supermarkets, 4.5 percent in grocery stores, 3.5 percent in specialty stores, and 2.9 percent in convenience stores. A number of major supermarket chains are represented in the county. There were also several convenience store chains in the county, but most food stamp households were shopping at independent convenience stores.

Retailer recruitment efforts in Georgetown County began in March 1997, when CCMI sent letters to the corporate headquarters of all the major chains operating in the 17 counties then under consideration. Six major supermarket chains were operating in Georgetown County. Shortly thereafter, letters were sent to those grocery, specialty, and convenience stores in the 17 counties (including Georgetown County) that were redeeming reasonable amounts of food stamp benefits.<sup>8</sup> CCMI then followed up with phone calls to most of these chains and stores to determine initial levels of support for the study.

In May 1997, CCMI visited with headquarters staff of one of the supermarket chains and obtained their general support for the study. At the end of May, CCMI staff met with a representative of the South Carolina Department of Social Services and visited a number of stores in Georgetown County. At that time, four small non-scanning stores in the county agreed to participate in the study using the DCSUs.

After recruiting these four non-scanning stores, efforts concentrated on the supermarket chains. From the very beginning, two of the six chains operating in Georgetown County said they were not interested in participating in the study. Having already obtained support from one chain, CCMI therefore focused its efforts on the remaining three chains, which had nine stores located in or very near Georgetown County.

Recruiting efforts were not easy. As noted earlier, senior executives often turned over CCMI's request for participation to a POS manager or an information technology (IT) manager without committing the chain to participation. CCMI would then need to gain the confidence of a mid-level manager who was already busy and had little or nothing to gain from participation. Retailers seldom returned calls, so recruiting efforts continued right through the end of August.

By mid- to late-August 1997, eleven stores had agreed to participate in the study. The four non-scanning stores included two convenience stores, one grocery store, and one combination grocery store/gas station. Of the remaining seven stores, two represented one supermarket chain and five represented another. Exhibit 2-5 presents summary information about the stores. Some of the supermarkets were located outside Georgetown County, but near enough to be a shopping destination for food stamp recipients in the county. Together, these eleven stores processed over 6,000 EBT transactions initiated by county recipients in March 1997. These transactions represented 34 percent of all benefits redeemed by Georgetown County recipients during the month.

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8 Originally, CCMI and Abt Associates defined "reasonable" in terms of at least 100 expected EBT transactions during a month. (The expected number of transactions was calculated using actual STARS redemption data from March 1997 and results from a prior study in Maryland that computed average EBT transaction amounts by store type.) Once the number of potential sites was narrowed, letters were sent to many stores processing fewer than 100 EBT transactions per month.

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**Exhibit 2-5****Participating Stores**

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Chain A	Major regional supermarket chain with almost 1,200 stores throughout the sunbelt states. Total annual sales exceed \$13 billion. Two stores located in or near Georgetown County. The chain stocks nearly 80,000 different items with unique UPC or PLU bar codes.
Chain B	Major regional supermarket chain with more than 1,200 stores in southeast and mid-atlantic states. Total annual sales exceed \$10 billion. Chain B has five stores located in or near Georgetown County.
Store C	This is a 24-hour combination grocery store/gas station, which is often very busy. It is located at the junction of several major highways and is an all-service type of store, with lots of fishing equipment and bait as well as gas, groceries, beer, and ice. The store has two checkout lanes and stocks about 2,300 items with different UPC codes.
Store D	This store is a busy grocery store. It was the only "grocery" in the area, being located 6-7 miles outside of Georgetown proper. The store also has a full delicatessen and gas pumps. The store, which is open until 8:00 p.m., stocks about 3,200 items with UPC codes.
Store E	This is a small convenience store located about 10 miles inland from Georgetown. The store hours are from 8:00 am to 9:00 pm. When the owner/operator needs to go home or elsewhere, she either closes the store temporarily or gets a family member or friend to substitute. The store stocks about 2,050 items with UPC codes.
Store F	This is a small convenience store located close to Store E. The store sells gasoline, and it is the only non-supermarket in the study that sells liquor. The hours of operation are from 8:00 am to 9:00 pm. Although there are two cash registers in this store, only one DCSU was installed. The second cash register serves mainly as a backup unit. The store stocks about 1,960 items with UPC codes.

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## **2.5 Retailer Agreements**

From the beginning of the project, the plan was to reimburse retailers for the cost and effort they would incur to participate in the study. To do so, each retailer and Abt Associates needed to enter into a "Data Collection Agreement" outlining what data the retailer would provide and the agreed-upon level of reimbursement. In July, therefore, CCMI and Abt associates began preparing three draft agreements. The first was for stores with scanning capabilities who were capturing and storing bar-code information at the transaction level. No hardware or software upgrades were needed to collect data for the study in what we called these "Category I" stores. The second draft agreement was for "Category II" stores, or stores that were scanning but not capturing bar-code information on a per-transaction basis. Hardware or software upgrades would be needed before such stores could supply data for the study. The final draft

agreement was for “Category IV” stores—those that did not use scanning equipment and had no current plans to invest in scanning equipment.<sup>9</sup>

During CCMI’s trip to Georgetown County in late May, CCMI staff told the non-scanning stores they visited that the project would reimburse them \$2,500 if they participated. Given that these stores would need to use the portable DCSUs for six to seven weeks, during which time store clerks would need to both scan purchased items at the DCSU **and** ring up purchase prices on their regular cash registers, the \$2,500 figure seemed justified. CCMI reported that the \$2,500 reimbursement did seem to induce several stores to participate.

In its conversations with the supermarket chains operating in Georgetown County, CCMI sought information about their expected level of effort to participate. Store personnel were largely unable to provide an estimate of expected costs. For the two chains that agreed to participate, the agreed-upon reimbursement was \$1,000 per chain (not per store). Their effort was largely limited to drawing an extract of their transaction log file once a week and sending the file to CCMI.<sup>10</sup>

Samples of the final data collection agreements are included as Appendix C. The agreements contain language assuring the stores that the collected data will be used for research purposes, not compliance efforts, and that the data will remain confidential. Abt Associates and CCMI included this language at the beginning of the process. Generally, the participating stores did not seem to worry too much about specific assurances in the agreement. The major exception is one of the two supermarket chains, which declined to provide data on non-FSP purchases (i.e., those paid for with resources other than EBT food stamp benefits) and on non-FSP eligible items in FSP purchases (which are present in purchases involving both EBT and cash tender). The chain cited issues of confidentiality as the reason for not providing these data.<sup>11</sup>

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9 CCMI had determined at this point that none of the potential participants in the study represented “Category III” stores, those without scanning equipment but actively considering investing substantial resources to install and use a scanning system.

10 CCMI provided blank tapes and pre-paid mailers to the supermarket chains.

11 It is worth noting that, to protect the confidentiality of these data, the supermarket chain had to do extra programming and data processing to pull the create extract files for the study. It would have been easier and cheaper for the chain to provide all its data to CCMI during the data collection period.

## Chapter 3

# Equipping Retailers and Collecting Data

In order to collect UPC-level data from the four stores without scanning systems, we needed to install a scanning device and a means to associate the item's price with the item. We therefore developed what we called a "data collection scanning unit," or DCSU, to be installed at the checkout counters in the four non-scanning stores. This chapter describes the DCSU, what procedures were followed to install the DCSUs and train the employees, and the process of collecting data from both the non-scanning and scanning stores. The original plan called for the data collection period to extend from September 1 through October 10, 1997.

At the outset of the study, we were prepared to work with one or two stores that were scanning but would need either a hardware or software upgrade to capture UPC data on a transaction-by-transaction basis. None of the eleven stores who participated in the study fell into this category.

### 3.1 Data Collection Scanning Unit

The planned use of DCSUs posed three unique problems not faced in stores with scanning units, namely:

- (1) The store would not have an existing price look-up file, matching UPC or other bar codes to an item's price.
- (2) Using the DCSU would require the store clerk to perform additional activities at the checkout, so the DCSU had to be easy to use.
- (3) There would be very limited counter space available to place the DCSU, so it had to be small.

Numerous technical "solutions" were considered in an attempt to minimize the impact of these problems. To address the first issue, CCMI staff decided they would build a price look-up file (also called a "UPC master file") for each of the four non-scanning stores prior to the start of the data collection period.

To capture the customer purchase information, the store clerk would be required to scan all items into the DCSU prior to entering each item again into the store's cash register system. For non-UPC items, the clerk would be asked to press an appropriate department key on the DCSU. At the end of the transaction, the clerk would press the appropriate tender key on the DCSU and enter the dollar amount of the transaction. Information on all scanned and key-entered items would be retained in the DCSU database.

To record these transactions and to overcome the counter space limitations, the recommendation for non-scanning stores was to offer to install a small, portable (and hence retrievable) stand-alone POS system. The components of the DCSU, described below, are shown in Exhibit 3-1.

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## Exhibit 3-1

### Data Collection Scanning Unit (DCSU)



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CCMI first selected the scanning device to be deployed with the DCSU, a Spectra-Physics VS1000 scanner shown at the right side of the exhibit. Spectra-Physics is a market leader in supplying small-footprint scanning devices. The VS1000 scanner also offered a multi-directional scanning ability, which simplified its ease of use.<sup>1</sup> Other benefits of the VS100 included a small footprint and the ability to scan multiple bar-code formats. In addition, the Spectra-Physics VS1000 was at the low end of the price range for fixed (as opposed to hand-held) scanners.

CCMI then turned to selection of the POS terminal for the DCSU, and selected a PC register (the PowerRegister 5480 system) manufactured by Riva. The criteria for the hardware selection were:

- ease of use
- small footprint
- portability
- compatibility with the Spectra-Physics VS1000
- competitive pricing
- MS-DOS operating system
- high storage capacity

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<sup>1</sup> Multi-directional scanning allows the store clerk to scan an item regardless of its orientation to the scanning unit. In contrast, hand-held scanning units offer only a single-scan beam, which will work only in a parallel product orientation. Thus, a multi-directional scanner has a faster product throughput than a single-scan beam (i.e., there is less need for repeated waving of the item's bar code in front of the scanner).

The Riva 5480 system met the above functional criteria and was competitively priced. Characteristics of the Riva that were particularly attractive were its small size, portability, “open architecture,” and expandability.<sup>2</sup> Because the DCSUs were to be installed for only a short period, CCMI wanted a unit that was easily portable and would not require special wiring or mounting to a stand or table. The Riva 5480 was also expandable to a full POS cash register system. The latter was important because, if the feasibility study demonstrated the ability to collect and analyze UPC data, CCMI wanted the flexibility of totally **replacing** a store’s current cash register system with an expanded DCSU if future data collection efforts were to be pursued. This would eliminate the need for two separate registers at the checkout lane.

Finally, CCMI decided to use a POS software package developed by Multi-Link. The Multi-Link POS software is easy to use and is currently in operation in both grocery and convenience stores. Furthermore, Multi-Link staff agreed to assist CCMI in modifying their software package to meet the needs of the study.

The most efficient method for building a price file for the four non-scanning stores was to program a hand-held scanning device to allow CCMI staff to scan the bar-code label of a store item into the device, and then to key-enter the item description (e.g., Coke) and unit size (e.g., 12-oz can) and the item’s price. The resulting UPC master file could then be downloaded into a laptop computer, where it would be transferred to the retailer’s DCSU.

Hand-held scanning devices by such manufacturers as Compsee, Telxon, Intermac, and Symbol are commonly used in the retail environment. For purposes of this study, CCMI selected the Compsee APEX II scanning unit for the following reasons:

- It could be programed in BASIC, which was easier than programming in a proprietary language;
- The unit’s database had a high storage capacity;
- The unit was quite durable (the unit survived a four-foot drop to a concrete floor during a demonstration);
- Its database could be transferred easily to a laptop computer; and
- It was in the middle of the price range for similar devices.

The Compsee scanning unit, with its battery-charging stand, is shown in Exhibit 3-2.

## **3.2 Equipment Purchase and Configuration**

Abt Associates purchased one Riva PC register (with monitor) and a Spectra-Physics VS1000 bar-code scanner in March 1997 so CCMI and its software vendor, Multi-Link, could begin modifying and testing software for the unit. The cost for these two pieces of equipment, including an introductory discount on the scanner, was \$3,090.

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2 Open architecture means that software and devices from different manufacturers can be added to the unit.



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## Exhibit 3-2

### Compsee Scanning Unit



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In late July 1997, once Georgetown County, South Carolina, had been selected and it was known that four stores (with five cash registers in use) would be needing DCSUs, CCMI ordered six more Riva units, monitors, and scanners. With five units to be placed in the field, this provided two backup units, one for software maintenance and one replacement unit in the event of equipment failure.

For this study, CCMI obtained the DCSU system components at the VAR (value-added reseller) pricing level shown in Exhibit 3-3. Total cost per complete DCSU was \$4,027. End-user retail pricing would add between \$800 and \$1,800 depending upon the standard VAR markup ranges of 20 to 45 percent. Such a configuration would retail for about \$4,800 to \$5,800 per lane (at mid-1997 prices).

In addition, CCMI ordered two Compsee APEX II units at a price of \$1,484 per unit. Buying two units enabled CCMI to use a two-person team to initialize each store.

Total cost for all of the above equipment was \$30,220, which does not include shipping.

CCMI had to create a standard set of procedures to set up each DCSU. Each component had its own initialization requirements, and the components had to be integrated within the whole system. The steps needed to achieve this initialization and integration were:

- The Multi-Link POS software had to be modified to meet the needs of the study.
- The modified Multi-Link software had to be loaded into the Riva unit and tested.

in departments of individual stores, which could bias the FSP/non-FSP comparison in the aggregate.<sup>17</sup> In other words, if the distribution of FSP purchases across supermarket departments depends on the choice set of product offerings at individual stores, then it is important to observe FSP transactions at a representative sample of stores before drawing conclusions about the content of FSP food baskets.

Exhibit 5-12 shows the distribution of all captured FSP item purchases across department, by household type, including FSP transactions at Chain A and Chain B. FSP households are grouped as follows: households with elderly persons and no children, households with no elderly and no children, and households with children.<sup>18</sup> Exhibit 5-12 reveals very little difference in the purchases of these types of households across the broad department categories, with one exception: households with elderly persons redeem a higher percentage of their FSP benefits on produce than other FSP households.

### **Percentage of Item Purchases on Store-Brand Items**

Purchase of store-brand (i.e., generic) food items is one means by which FSP households can stretch their food stamp dollars. We identified store-brand items at Chain A and Chain B by coding items in the Master Item File according to the stores' manufacturer code, which appears as the first five digits of the UPC code.<sup>19</sup> Among all items appearing in our Master Item File, of 33,810 items observed in transactions during the data collection period, 11 percent were store-brand items.

Exhibits 5-13 through 5-15 show the percent of FSP redemptions and non-FSP purchases spent on store-brand items. At Chain A, the percentage of FSP benefits spent on store-brand items was six percentage points greater than the percentage of non-FSP purchases spent on store-brand items. Exhibit 5-14 shows that most of the difference in store-brand purchases between FSP and non-FSP transactions is due to higher spending by FSP households on store-brand **grocery** items.<sup>20</sup> Exhibit 5-15 shows that there are some differences in spending on store-brand items within FSP households, by household type. FSP households with elderly persons purchase a higher percentage of store-brand items than other FSP households, especially in the grocery and frozen food departments.

### **Distribution of Item Purchases by Product Category**

The second categorization used to describe the composition of food baskets is a taxonomy of food items based on food groups. This categorization scheme allows us to aggregate individual food purchases into categories that are much more narrowly defined than supermarket departments: there are ten departments for categorizing food items and 168 product categories. The assignment of product category codes to individual food items was described in Section 4-3.

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17 Note that the FSP percentage of all transactions at Stores #1 and #2 is 1.2 and 10.3, respectively.

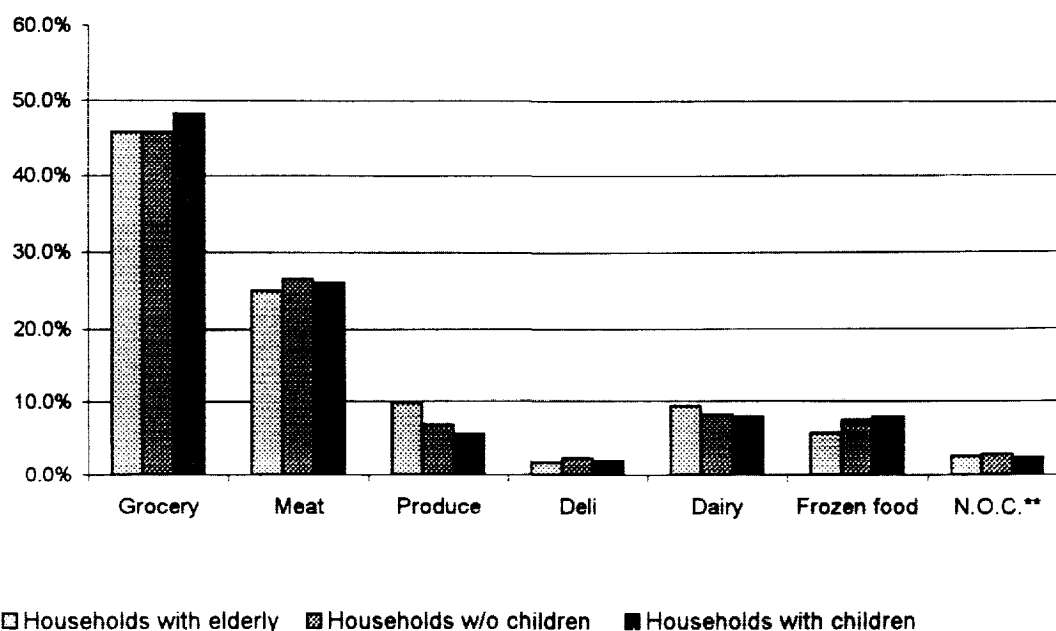
18 Four percent of "households with children" also include elderly persons.

19 We recognize that there are "generic" brands that are not store-brands. Identification of all "generic" items at Chains A and B was beyond the scope of this study.

20 Unfortunately, because we do not have a comparison non-FSP group at Chain B, we cannot draw conclusions about the percentage of spending on store brand items by FSP households at Chain B. Significant differences in the quality and breadth of store brand offerings across supermarket chains may lead to significant variation in store brand purchases by store chain.

# Exhibit 5-12

## Distribution of Food Stamp Redemptions, By Supermarket Department and Household Type: Redemptions at Seven Supermarkets in Study Site



	Households with elderly	Households w/o children	Households with children	Unknown Household Type*	Total
<b>DEPARTMENT</b>					
Grocery	45.8%	45.8%	48.2%	47.3%	47.7%
Meat	25.0%	26.6%	26.1%	26.3%	26.1%
Produce	9.8%	6.8%	5.5%	6.4%	5.9%
Deli	1.7%	2.3%	1.9%	1.5%	1.9%
Dairy	9.4%	8.2%	7.9%	8.1%	8.0%
Frozen food	5.6%	7.4%	7.8%	7.8%	7.7%
N.O.C.**	2.5%	2.8%	2.4%	2.4%	2.4%
<b>Total purchases/redemptions</b>	<b>13,981</b>	<b>42,724</b>	<b>244,291</b>	<b>32,465</b>	<b>333,461</b>
<b>Number FSP households</b>	<b>267</b>	<b>535</b>	<b>1,577</b>	<b>325</b>	<b>2,704</b>

Notes: Sample includes FSP redemptions by South Carolina FSP households at seven supermarkets in Georgetown County during September and October 1997.

\*Household type is from the South Carolina FSP administrative database of active FSP cases during October 1997. Household type is not known for FSP cases redeeming benefits in September or October 1997 but not receiving a disbursement in October.

\*\* N.O.C. means not otherwise classified.

NOTE: These results are illustrative only; they are not generalizable to any food stamp population.

**Exhibit 5-13**

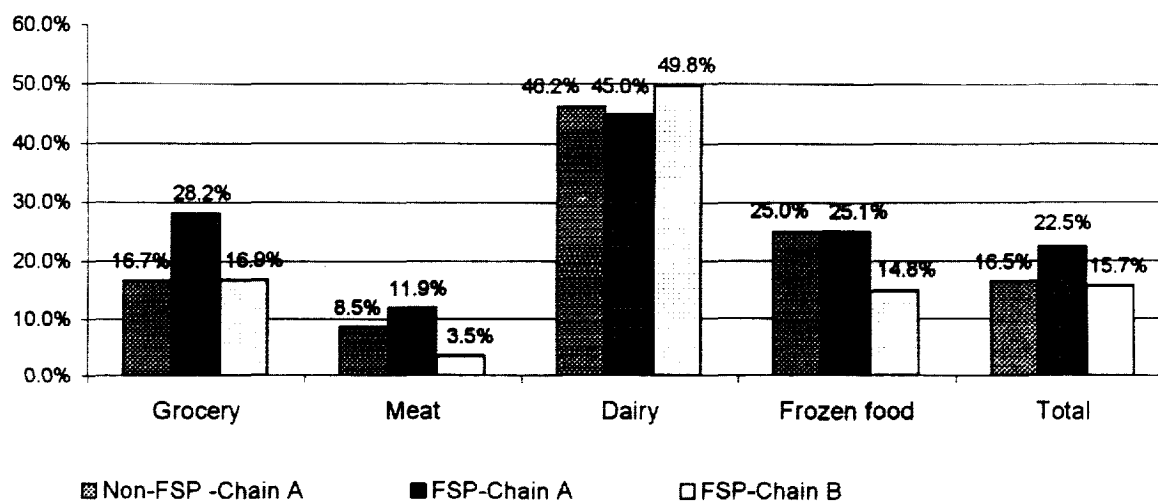
**Percent of FSP and Non-Food Stamp Expenditures on Store Brand Items**

**Percent of FSP Redemptions and Non-FSP Dollars Spent  
on Store Brand Items**



# Exhibit 5-14

## Store Brand Percent of Food Stamp Redemptions and Non-Food Stamp Purchases, By Supermarket Department



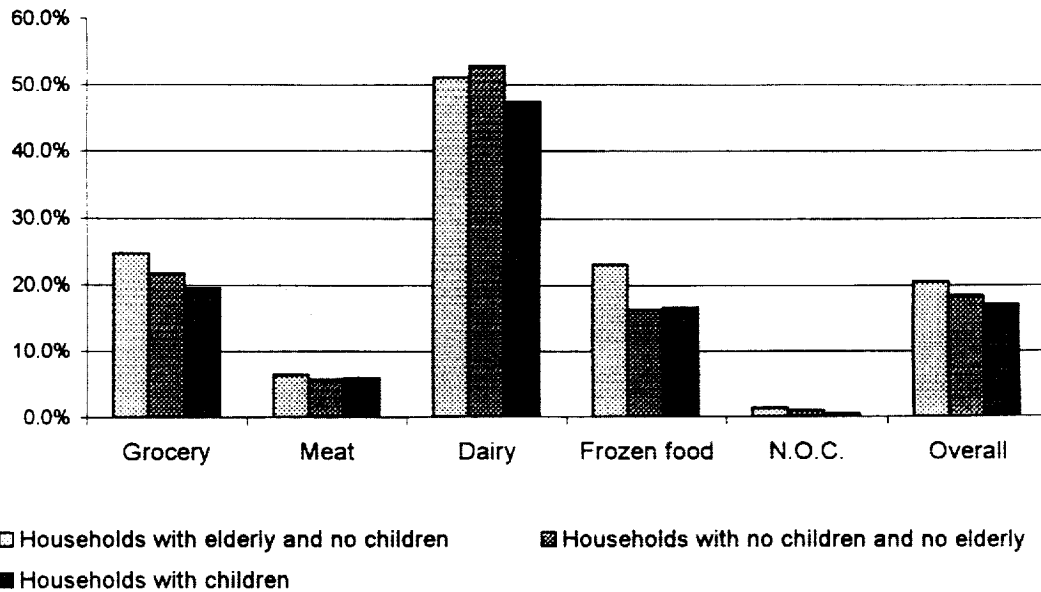
### Notes

Food Stamp transactions include all transactions paid for in whole or part with FSP tender. Non-food stamp transactions are transactions with no FSP tender.

These results are illustrative only; they are not generalizable to any food stamp population.

# Exhibit 5-15

## Store Brand Percent of Food Stamp Redemptions, By Household Type and Supermarket Department



Percent of Redemptions on Store Brand Items	Households with elderly and no children	Households with no children and no elderly	Households with children	Unknown Household Type*	Total
Overall	20.5%	18.4%	17.2%	18.0%	17.5%
<b>By Department</b>					
Grocery	24.7%	21.8%	19.5%	20.6%	20.1%
Meat	6.4%	5.7%	5.9%	6.2%	5.9%
Dairy	51.1%	52.8%	47.4%	50.0%	48.5%
Frozen food	23.1%	16.4%	16.6%	18.9%	17.1%
N.O.C.	1.3%	1.0%	0.5%	0.5%	0.6%
Total Redemptions	13,981	42,724	244,291	32,465	333,461
Number FSP households	267	535	1,577	325	2,704

Notes: Sample includes FSP redemptions by South Carolina FSP households at seven supermarkets in Georgetown County during September and October 1997.

Household type is from the South Carolina FSP administrative database of active FSP cases in during October 1997.

Household type is not known for FSP cases that redeemed benefits in September or October 1997 but did not receive a disbursement in October.

These results are illustrative only; they are not generalizable to any food stamp population.

Exhibit 5-16 compares the content of FSP and non-FSP food baskets purchased at Chain A, by product category. (FSP-ineligible items are dropped from non-FSP transactions for the purpose of calculating this distribution.) Recall that FSP food baskets contain a higher percentage of grocery and meat items than non-FSP food baskets (see Exhibit 5-11). The distribution of items by product category shows that the difference in the meat department is due to higher expenditures on red meat and miscellaneous meat products (meat, NFS) by FSP households. The difference in the grocery department is due to higher expenditure by FSP households on grain-based prepared foods, flour, rice and pasta, fats and oils, sugar and candy, and beverages.

Exhibit 5-17 shows the distribution of FSP redemptions across product category by FSP household type. FSP households with elderly persons spend nearly twice as much of their FSP allotment on fruit than other households, and they spend two percentage points more on vegetables than households with children. All households spend the highest percentage of their allotment on red meat. The next most important product category, in terms of expenditures, for households with children is soft drinks; for households without children it is lunch meat; and for households with elderly it is vegetables.

### **Distribution of Purchases of Specific Items, by Quantity Size**

As discussed above, purchase of store-brand or generic grocery items is one way in which FSP households may maximize the value of their FSP benefits, because generic or store-brand items typically have lower unit prices than branded items. Similarly, FSP households may maximize the purchasing power of their FSP allotment by choosing larger commodity sizes, which typically have lower unit prices.

Package size information was obtained from Chain A as part of their host price file (see Section 4.3), but these data were not comprehensive and the information was not standardized.<sup>21</sup> We cleaned the package size information for a selection of staple food items: milk, sugar, flour, and breakfast cereals. Exhibits 5-18 through 5-21 show the distribution of food purchases by product size, comparing FSP and non-FSP purchases at Chain A, and FSP purchases at Chain A and Chain B across household type. Evidence from milk, sugar, flour, and breakfast cereal purchases at Chain A reveals that FSP households purchase larger item sizes than non-FSP households.

#### ***Milk***

The difference between FSP and non-FSP purchases by commodity size is especially pronounced for milk purchases: 70 percent of FSP purchases of milk are for gallon sizes, whereas less than 50 percent of milk purchases of non-FSP households are for gallon sizes. (The distribution is measured over dollar expenditures.)

#### ***Sugar***

Most sugar purchases, by FSP and non-FSP households, are for a 5-pound package; but nearly 14 percent of sugar purchases by FSP households are for the 10-pound package, compared to 2.4 percent of

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21 The single largest problem in using the package size data was that the data field contained a mix of numeric and alphabetic data to denote the package size and the units of measurement, but the units of measurement information was not standardized. For example, we might see "10 ounces" or "10 oz" or "10 z." A considerable effort would be necessary to clean these data for all items in the master item file.

**Exhibit 5-16****Distribution of Food Stamp and Non-Food Stamp Item Purchases, By Product Category**

	Food Stamp Redemptions	Non-FSP Transactions
<b>MILK, CHEESE, CREAM</b>	<b>4.6%</b>	<b>7.8%</b>
Milk	2.4%	3.9%
Cheese	2.1%	3.3%
Cream	0.1%	0.3%
Yogurt	0.2%	0.3%
<b>FRUIT AND VEGETABLES</b>	<b>12.2%</b>	<b>14.9%</b>
Fruit	3.6%	4.4%
Juice	1.3%	2.4%
Vegetables	7.4%	8.1%
<b>PREPARED FOODS</b>	<b>9.6%</b>	<b>9.0%</b>
Frozen/Refrigerated	2.4%	2.4%
Deli/Salad bar	0.5%	1.4%
Grain Based	4.2%	2.1%
Meat Based	0.4%	0.4%
Soup	1.0%	1.3%
Diet	0.4%	0.3%
Baby Food	0.8%	1.0%
<b>MEAT AND MEAT ALTERNATIVES</b>	<b>32.2%</b>	<b>26.8%</b>
Red meat	12.2%	10.5%
Poultry	3.2%	3.8%
Fish	2.2%	2.3%
Lunch meats	6.1%	5.4%
Eggs	0.8%	0.9%
Legumes	0.2%	0.1%
Nuts	0.7%	0.8%
Meat, NFS*	6.8%	3.1%
<b>GRAIN PRODUCTS</b>	<b>10.9%</b>	<b>10.6%</b>
Breakfast cereals	3.3%	2.5%
Flour, rice, pasta	3.5%	1.8%
Bread	1.7%	3.1%
Bakery products	2.3%	3.2%
<b>OTHER FOODS</b>	<b>30.3%</b>	<b>31.0%</b>
Fats, oils	3.0%	2.5%
Sugar, candy	4.7%	3.7%
Seasonings	1.3%	0.7%
Soft drinks, ades	7.9%	6.3%
Coffe, tea	1.1%	2.4%
Salty snacks	2.1%	2.2%
Cookies, cakes, pies	4.9%	5.4%
Ice cream, jello, pudding	1.5%	2.5%
Condiments	2.7%	2.5%
NFS	1.2%	2.8%
<b>Total purchases/redemptions</b>	<b>89,426</b>	<b>2,260,366</b>

Notes: Table excludes items in the following broad product categories: Non-food, General Merchandise, Fees.  
Food Stamp transactions include all transactions paid for in whole or part with FSP tender. Non-food stamp transactions are transactions with no FSP tender.

Percentages may not sum to 100 percent due to rounding.

\* NFS means not further specified.

These results are illustrative only; they are not generalizable to any food stamp population.



**Exhibit 5-17**
**Distribution of Food Stamp Redemptions, By Product Category and Household Type**

Product Category	Households with elderly	Households w/o children	Households with children	Unknown	Total
<b>MILK, CHEESE, CREAM</b>	<b>5.6%</b>	<b>5.4%</b>	<b>4.9%</b>	<b>5.1%</b>	<b>5.0%</b>
Milk	3.3%	2.7%	2.4%	2.4%	2.5%
Cheese	2.0%	2.5%	2.3%	2.5%	2.3%
Cream	0.2%	0.1%	0.1%	0.1%	0.1%
Yogurt	0.1%	0.1%	0.1%	0.2%	0.1%
<b>FRUIT AND VEGETABLES</b>	<b>16.9%</b>	<b>12.7%</b>	<b>10.4%</b>	<b>11.4%</b>	<b>11.1%</b>
Fruit	6.0%	3.6%	3.0%	3.6%	3.3%
Juice	2.9%	1.8%	1.4%	1.2%	1.5%
Vegetables	8.0%	7.3%	6.1%	6.7%	6.4%
<b>PREPARED FOODS</b>	<b>7.8%</b>	<b>8.8%</b>	<b>10.4%</b>	<b>9.8%</b>	<b>10.0%</b>
Frozen/Refrigerated	1.8%	2.6%	2.8%	2.8%	2.8%
Deli/Salad bar	0.5%	0.4%	0.4%	0.2%	0.4%
Grain Based	2.9%	3.5%	4.4%	4.2%	4.2%
Meat Based	0.3%	0.2%	0.5%	0.5%	0.5%
Soup	1.4%	1.1%	1.0%	1.1%	1.0%
Diet	0.7%	0.3%	0.3%	0.2%	0.3%
Baby Food	0.1%	0.7%	0.9%	0.9%	0.9%
<b>MEAT AND MEAT ALTERNATIVES</b>	<b>31.1%</b>	<b>33.1%</b>	<b>30.9%</b>	<b>30.7%</b>	<b>31.2%</b>
Red meat	11.6%	14.0%	13.6%	14.5%	13.6%
Poultry	4.4%	3.9%	3.9%	3.7%	3.9%
Fish	1.6%	1.6%	1.2%	1.6%	1.3%
Lunch meats	7.7%	7.7%	7.2%	6.7%	7.2%
Eggs	1.3%	0.8%	0.7%	0.6%	0.7%
Legumes	0.3%	0.3%	0.2%	0.2%	0.2%
Nuts	0.6%	0.7%	0.6%	0.7%	0.6%
Meat, NFS*	3.7%	4.2%	3.6%	2.8%	3.6%
<b>GRAIN PRODUCTS</b>	<b>10.9%</b>	<b>9.0%</b>	<b>10.6%</b>	<b>10.5%</b>	<b>10.4%</b>
Breakfast cereals	2.7%	2.2%	3.3%	3.6%	3.2%
Flour, rice, pasta	4.5%	2.8%	3.2%	3.0%	3.2%
Bread	2.0%	2.0%	1.9%	1.8%	1.9%
Bakery products	1.7%	2.0%	2.3%	2.1%	2.2%
<b>OTHER FOODS</b>	<b>27.8%</b>	<b>30.8%</b>	<b>32.7%</b>	<b>32.4%</b>	<b>32.2%</b>
Fats, oils	3.4%	2.8%	2.9%	3.2%	2.9%
Sugar, candy	4.2%	4.2%	4.5%	4.6%	4.4%
Seasonings	1.5%	1.0%	1.1%	1.4%	1.1%
Soft drinks, ades	6.3%	7.2%	8.5%	7.8%	8.2%
Coffe, tea	1.6%	1.8%	1.0%	1.3%	1.1%
Salty snacks	1.4%	2.2%	3.0%	2.5%	2.8%
Cookies, cakes, pies	3.4%	3.9%	4.2%	4.0%	4.1%
Ice cream, jello, pudding	1.6%	1.9%	1.9%	1.9%	1.9%
Condiments	1.5%	2.7%	3.0%	2.8%	2.9%
NFS	2.9%	3.1%	2.7%	2.8%	2.8%
<b>Total purchases/redemptions</b>	<b>13,981</b>	<b>42,724</b>	<b>244,291</b>	<b>32,465</b>	<b>333,461</b>

Notes: Table excludes items in the following broad product categories; Non-food, General Merchandise, Fees.

Food Stamp transactions include all transactions paid for in whole or part with FSP tender. Non-food stamp transactions are transactions with no FSP tender.

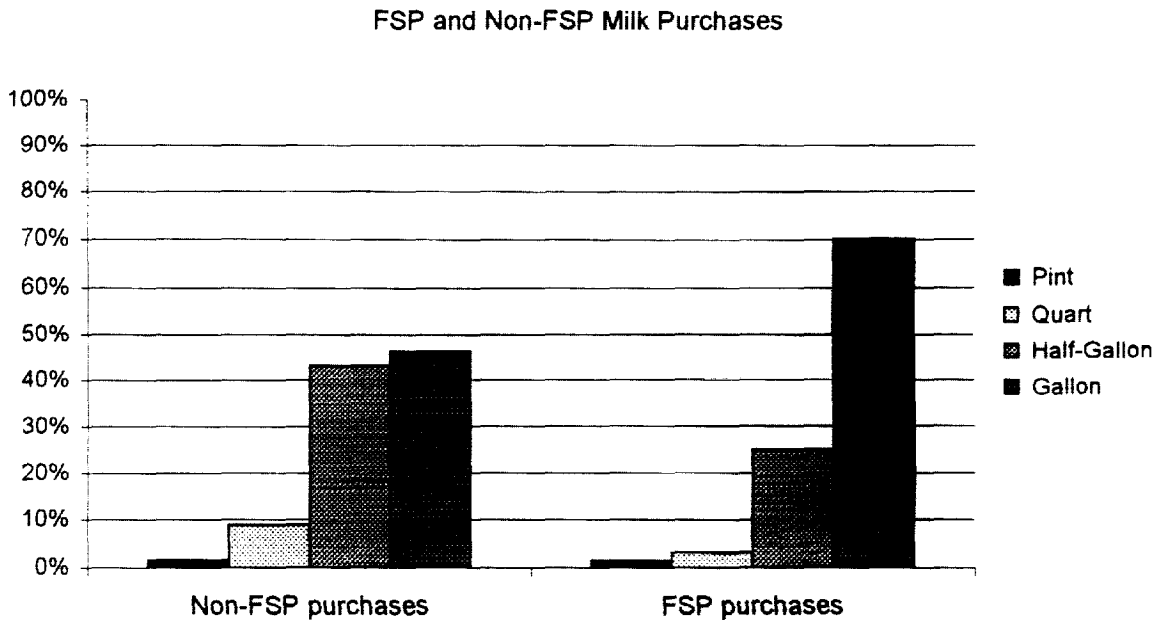
Percentages may not sum to 100 percent due to rounding.

\* NFS means not further specified.

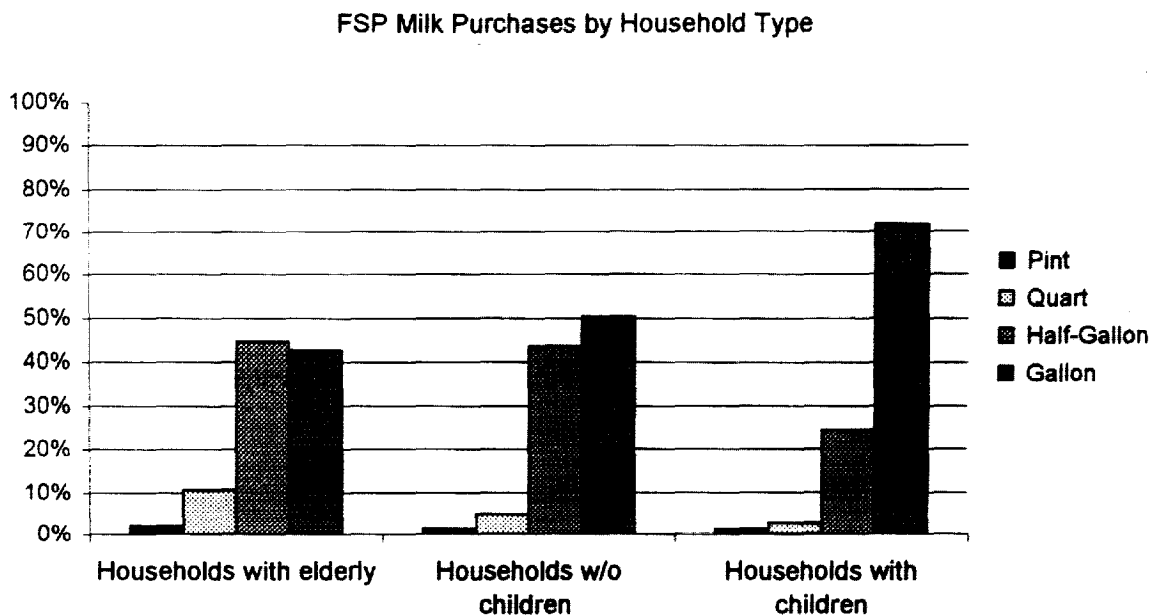
These results are illustrative only; they are not generalizable to any food stamp population.

**Exhibit 5-18**

**Distribution of Milk Purchases By Quantity Size: Food Stamp and Non-Food Stamp Purchases**



Note: Data for FSP and Non-FSP purchases are from two supermarkets in Georgetown County.

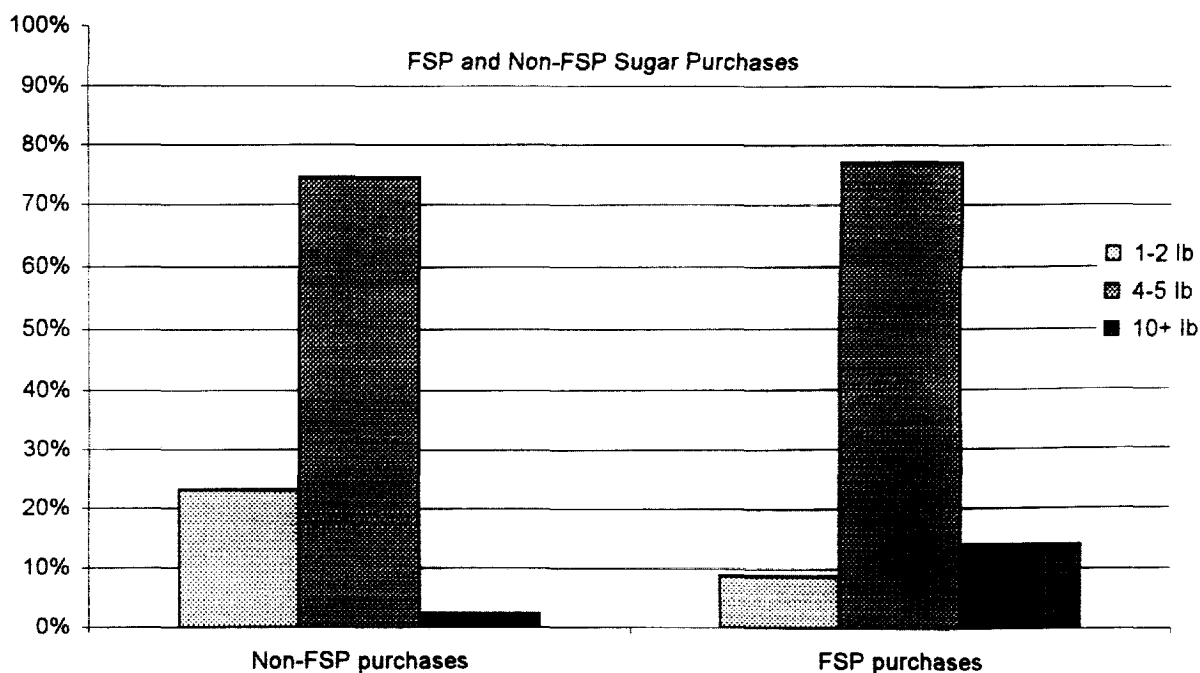


Notes: Data for FSP purchases are from seven supermarkets in Georgetown County.

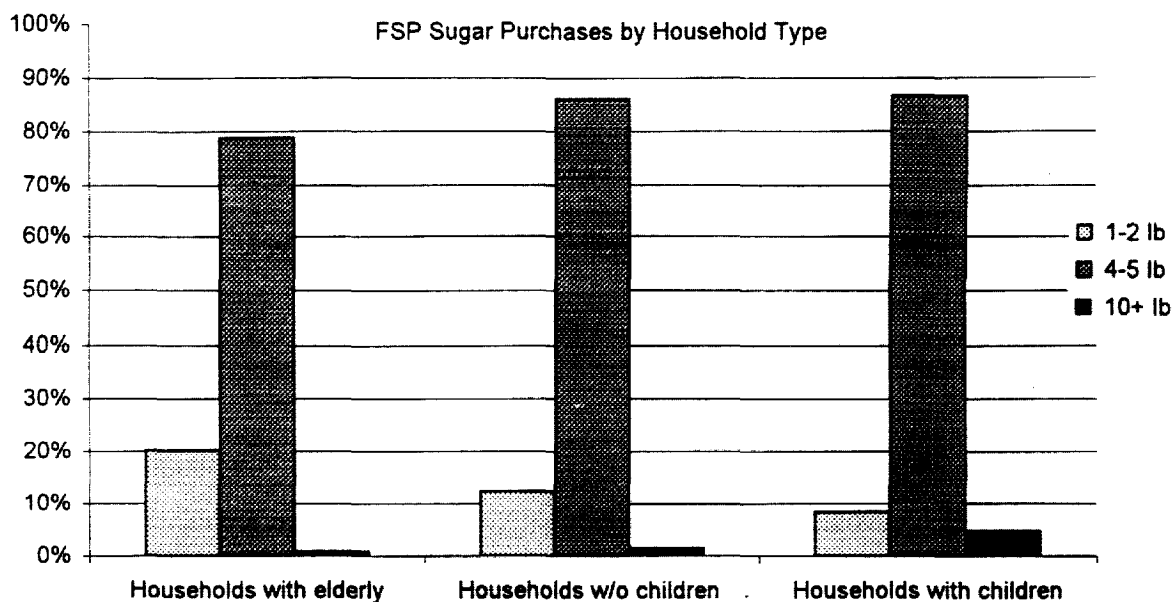
These results are illustrative only; they are not generalizable to any food stamp population.

# Exhibit 5-19

## Distribution of Sugar Purchases By Quantity Size: Food Stamp and Non-Food Stamp Purchases



Note: Data for FSP and Non-FSP purchases are from two supermarkets in Georgetown County.

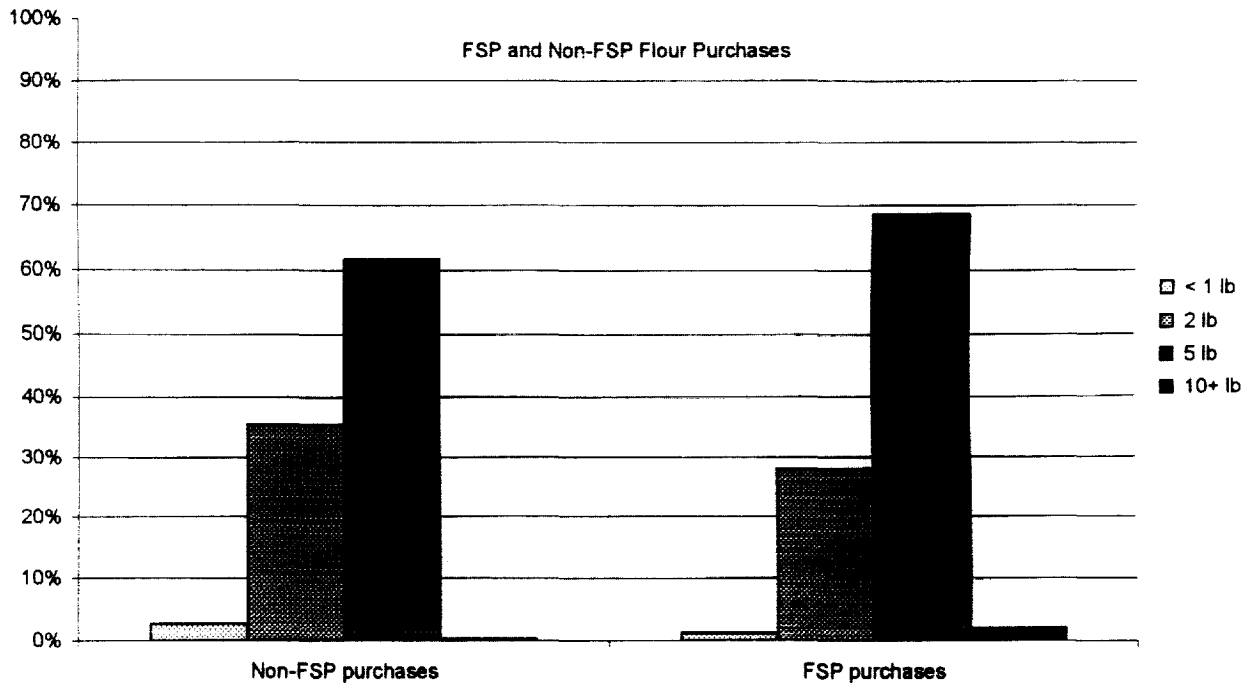


Notes: Data for FSP purchases are from seven supermarkets in Georgetown County.

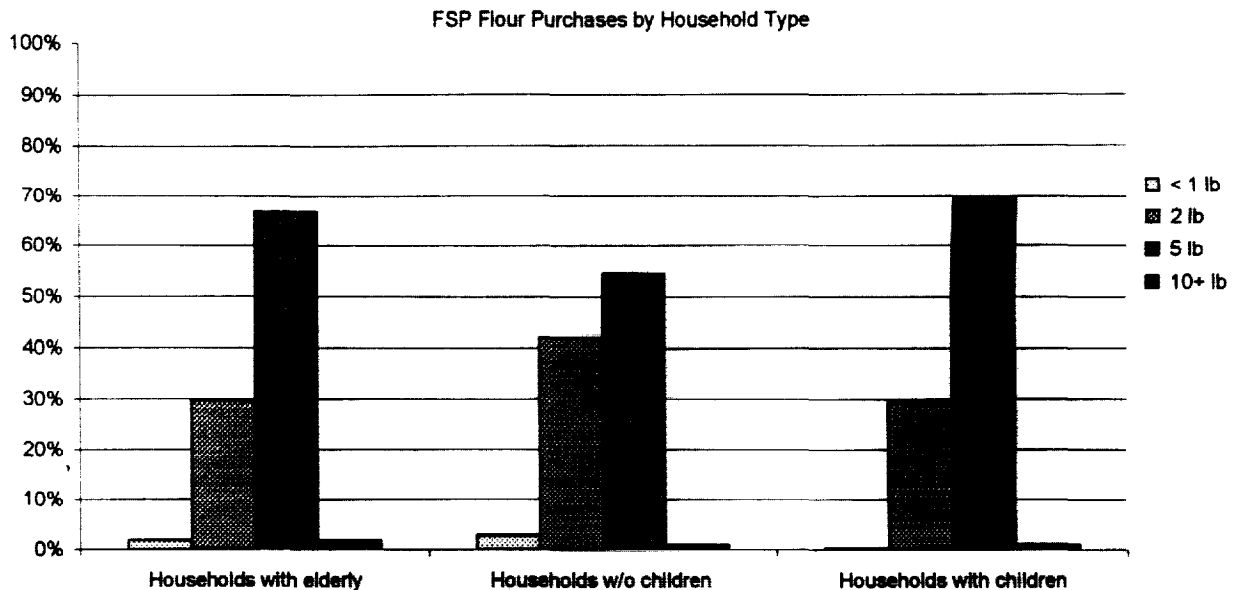
These results are illustrative only; they are not generalizable to any food stamp population.

## Exhibit 5-20

### Distribution of Flour Purchases By Quantity Size: Food Stamp and Non-Food Stamp Purchases



Note: Data for FSP and Non-FSP purchases are from two supermarkets in Georgetown County.

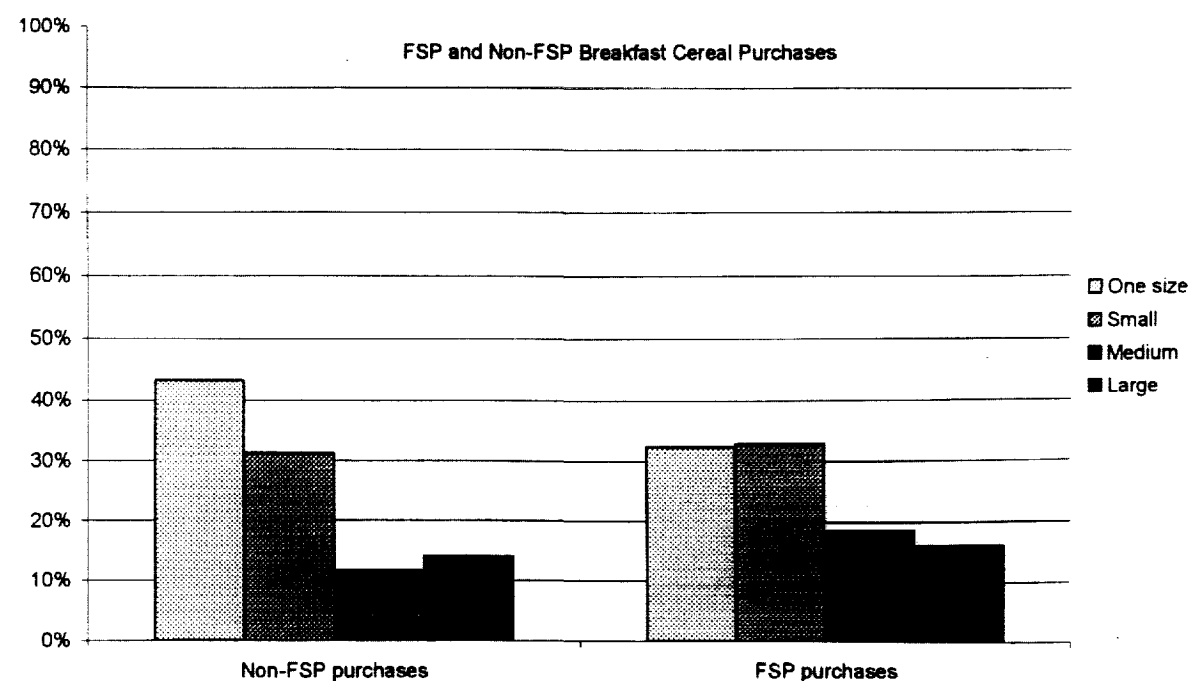


Notes: Data for FSP purchases are from seven supermarkets in Georgetown County.

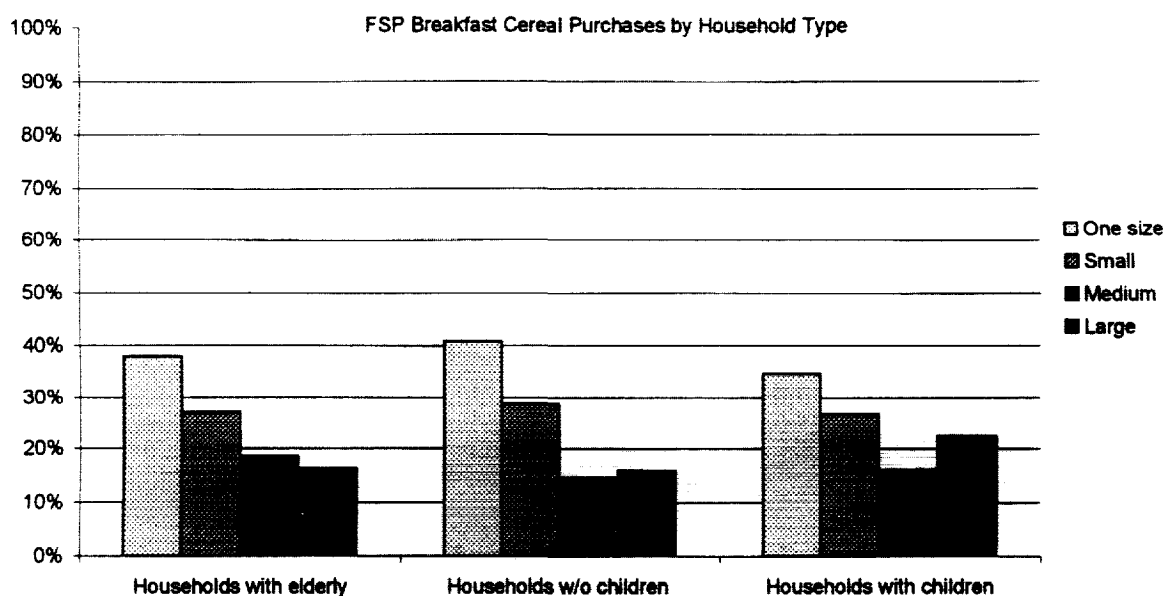
These results are illustrative only; they are not generalizable to any food stamp population.

## Exhibit 5-21

### Distribution of Breakfast Cereal Purchases By Quantity Size: Food Stamp and Non-Food Stamp Purchases



Note: Data for FSP and Non-FSP purchases are from two supermarkets in Georgetown County.



Notes: Data for FSP purchases are from seven supermarkets in Georgetown County.

Breakfast cereals include "ready-to-eat" cereal only. "One size" refers to cereal brands available in only one package size at the sample stores.

These results are illustrative only; they are not generalizable to any food stamp population.

non-FSP purchases. Finally, less than 10 percent of FSP purchases of sugar are on the 2-pound package, whereas 23 percent of non-FSP purchases are for the 2-pound package.

### ***Flour***

Flour purchases show a pattern that is similar to sugar purchases: FSP households are somewhat more likely to purchase the 5-pound size, and less likely to purchase the 2-pound size. There are few purchases of flour in a 10-pound size by FSP or non-FSP households.

### ***Breakfast Cereal***

The tabulation of breakfast cereals by package size is complicated by the fact that different brands of cereal are packaged in different sizes. For example, flakes are a lightweight cereal, whereas raisin bran is a heavy cereal. A medium-size box of flakes weighs considerably less than a medium-sized box of raisin bran. We could not, therefore, characterize a “small” package size according to the weight of the box, because “small” means different things to different brands. To represent the choices that shoppers face in the breakfast cereal aisle, we sorted all breakfast cereals by cereal brand and package size and, if a brand had three sizes, we coded small, medium, and large in order of package size. If a brand had only two sizes, we coded the two packages as small and large; if a brand had only one size, we coded the cereal as “one size.” Exhibit 5-21 shows that FSP households are more likely to purchase medium and large size breakfast cereal packages and less likely to purchase one-size brands of cereal, compared to non-FSP households. Among FSP households, households with children spend a larger percentage of cereal purchases on large size packages than other households.

The differences in commodity size purchased by FSP and non-FSP households may be due to the fact that FSP households seek the economy of larger item sizes, or it may simply reflect differences in average household size between FSP and non-FSP households. Ideally, in determining whether or not FSP households are more likely to purchase larger commodity sizes, we would like to control for determinants of demand such as household size; household characteristics, however, cannot be identified in the non-FSP transaction data from Chain A.

The bottom panels of Exhibits 5-18 through 5-21 show that, within FSP households, households with children purchase larger item sizes than other FSP household types. The differences by household composition, within the FSP sample, suggests that at least some portion of the FSP/non-FSP difference in purchases by commodity size may be due to differences in the distributions of household size within the FSP and non-FSP samples.

### **Distribution of Purchases by Nutritional Characteristics**

In comparing the composition of the food baskets of FSP and non-FSP households, a final dimension of choice that we examine is the choice of nutritional quality. Recall, however, that there are over 33,000 different grocery items in our Master Item File. For obvious reasons, we do not attempt an analysis of the nutrient composition of purchased food baskets. Instead, we examine the nutritional choices that FSP households make when purchasing two specific items: milk and breakfast cereal.

A comparison of milk purchased by FSP households and non-FSP households at Chain A shows that over 70 percent of FSP redemptions for milk were for whole milk, and only 20 percent were for low-fat

or skim milk (see Exhibit 5-22). In contrast, among non-FSP purchases, only 32 percent of purchases were for whole milk, and over 60 percent were for low-fat or skim milk.

The distribution of FSP milk purchases by household type shows that households with children purchase the highest percentage of whole milk: 77 percent, versus 57 percent for households without children and 53 percent for households with elderly persons. Only 33 percent of non-FSP purchases of milk, however, are for whole milk; whereas, across all FSP households, over 50 percent of FSP redemptions for milk are for whole milk. Therefore, the FSP/non-FSP differences in milk purchase cannot be attributed totally to possible differences in the proportion of households with children in the FSP and non-FSP populations.

The second item for which we examine nutrient content is breakfast cereals. Nutritional information for individual brands of breakfast cereal are readily available from manufacturers in a concise, published format. We merged nutrient data and serving sizes (basically, the information that appears on the box) to our Master Item File.<sup>22</sup> Because cereals are not a homogenous product—like sugar, flour, and milk—the choice of nutritional content is made simultaneously with a choice about product price. Therefore, to examine the distribution of cereal purchases by nutrition content, we did not tabulate cereal expenditures—we tabulated the number of servings purchased.

Exhibits 5-23 through 5-25 show the distribution of breakfast cereal servings purchased by FSP and non-FSP households, by sugar content, iron content, and fat content. On average, food stamp households purchase breakfast cereals with higher sugar content, lower iron content, and higher fat content, compared with non-FSP households. The difference between FSP and non-FSP purchases of cereal is most pronounced for sugar content: 79 percent of cereal servings purchased by FSP households are high sugar (greater than 10 grams of sugar per serving), compared to 57 percent of non-FSP purchases of cereal servings.

The bottom panels of Exhibits 5-23 through 5-25 show the distribution of breakfast cereal servings purchased by the three types of FSP households. There are marked differences in the breakfast cereal purchases of elderly households versus other FSP households; households with elderly persons purchase breakfast cereals that are lower in sugar, higher in iron content, and lower in fat, compared to purchases of other FSP households.

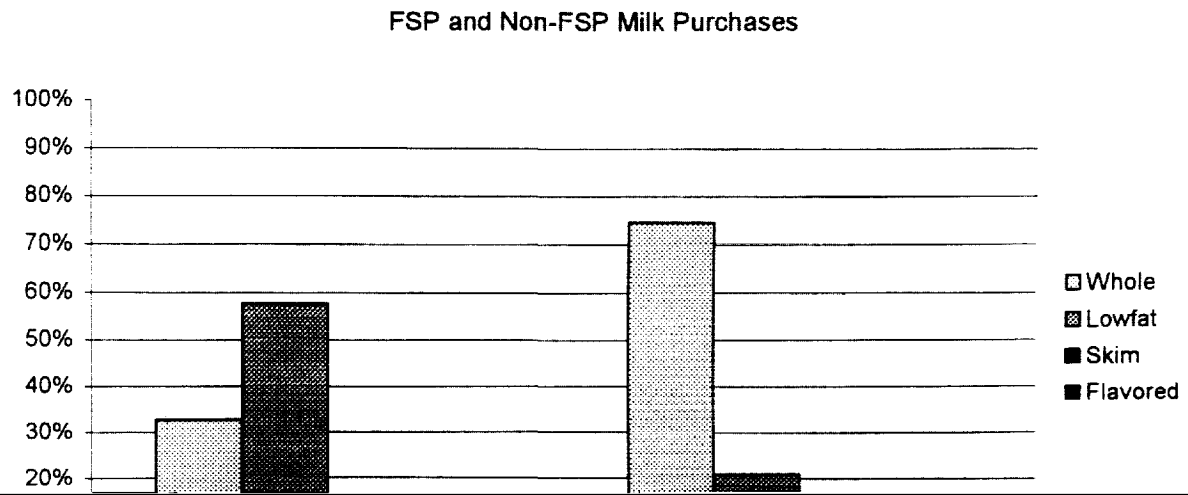
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22 Nutrition information was obtained from General Mills, Kelloggs, and Quaker Oats. Chains A and B each stocked a wide variety of cereals under their store brand. Package sizes for Chain B's store brand were obtained from the host price file of a supermarket outside the study that carried the same generic brand. The store brand cereals in Chains A and B were matched to nutrient information obtained off the boxes of store-brand cereals in two store chains in the Boston area. The match of store brands was possible because the cereals at Chain A and Chain B were uniquely different sizes. For example, Chain A corn flakes was 28.4 ounces, whereas Chain B corn flakes was 31 ounces; Chain A raisin bran was 55 ounces, and Chain B raisin bran was 54 ounces. The package sizes, within a chain, matched the package sizes within Boston chains exactly.

Nutrition information for individual cereal brands was matched to all occurrences of that brand in the Master Item File. A cereal will appear in the Master Item File multiple times because each package size has a unique UPC code.

**Exhibit 5-22**

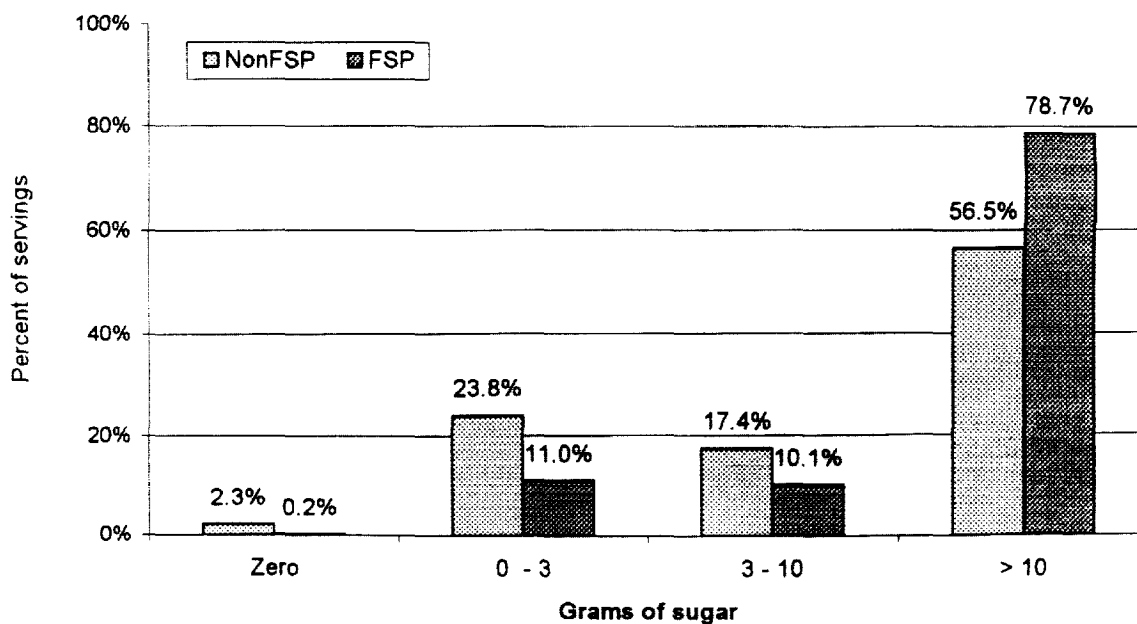
**Distribution of Milk Purchases By Milk Type: Food Stamp and Non-Food Stamp Purchases**



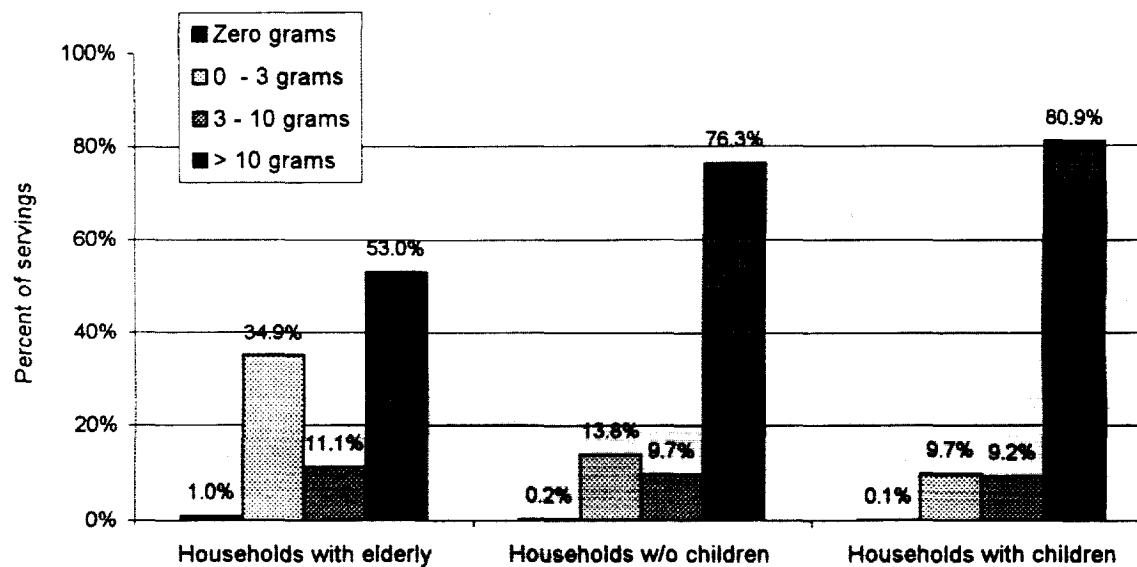


# Exhibit 5-23

## Distribution of Purchased Breakfast Cereal Servings By SUGAR Content: Food Stamp and Non-Food Stamp Purchases



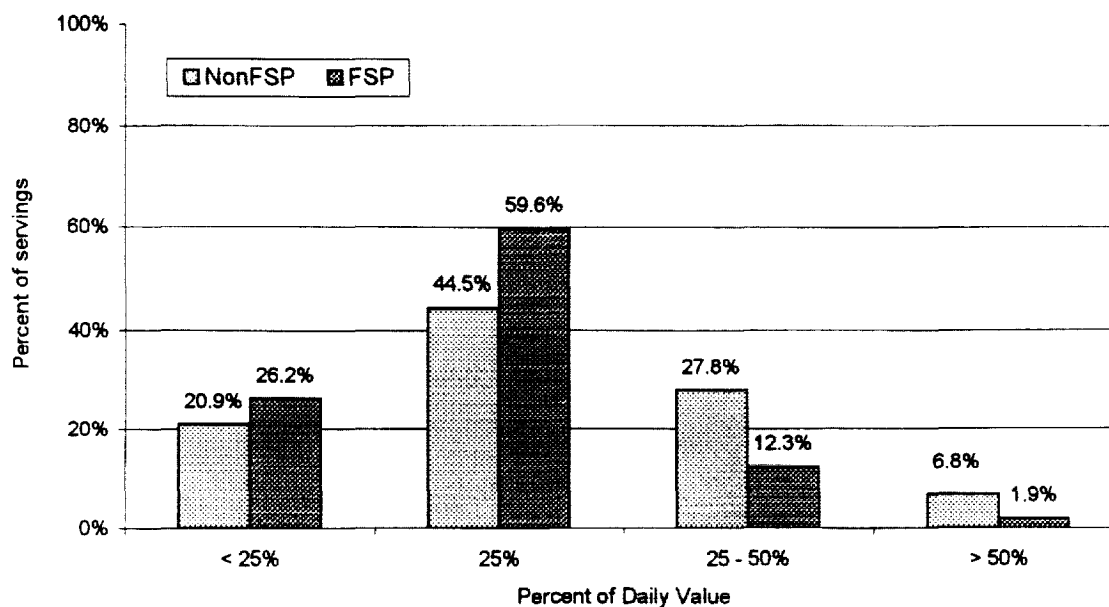
## Distribution of Food Stamp Purchases of Breakfast Cereal Servings, By SUGAR Content and Household Type



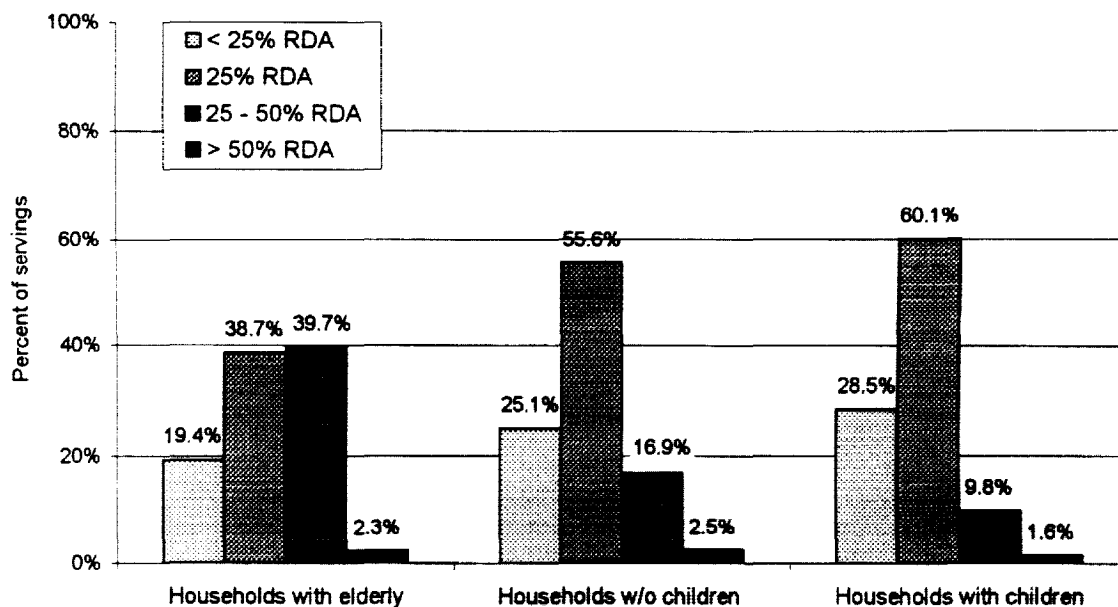
NOTE: These results are illustrative only; they are not generalizable to any food stamp population.

# Exhibit 5-24

## Distribution of Purchased Breakfast Cereal Servings By IRON Content: Food Stamp and Non-Food Stamp Purchases



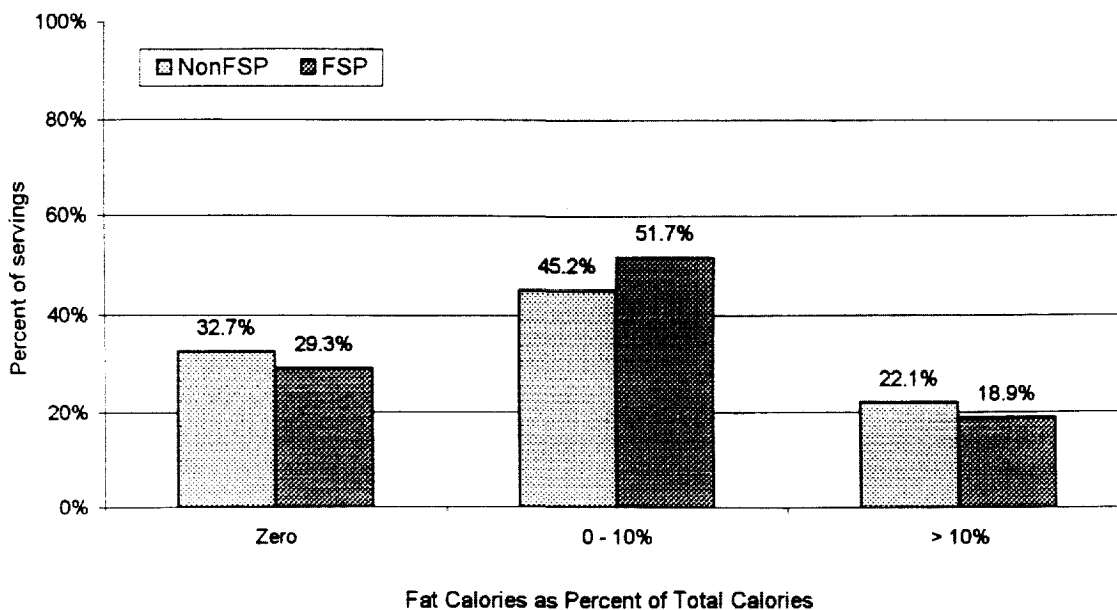
## Distribution of Food Stamp Purchases of Breakfast Cereal Servings, By IRON Content and Household Type



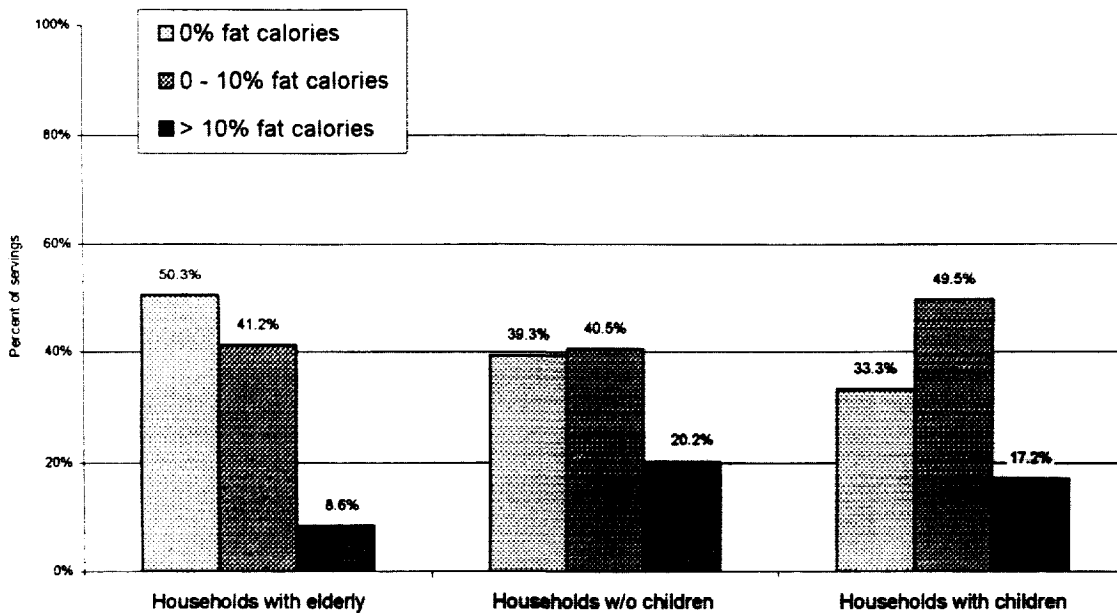
NOTE: These results are illustrative only; they are not generalizable to any food stamp population.

# Exhibit 5-25

## Distribution of Purchased Breakfast Cereal Servings By FAT Content: Food Stamp and Non-Food Stamp Purchases



## Distribution of Food Stamp Purchases of Breakfast Cereal Servings, By Percent FAT Calories and Household Type



NOTE: These results are illustrative only; they are not generalizable to any food stamp population.

## 5.5 Characteristics of DCSU Data

The data collected by the DCSUs are so incomplete that we have not included them in the previous analyses. Store personnel in these four stores, however, did use the DCSUs occasionally. Because so little is known about what items food stamp clients buy in small, neighborhood grocery stores and convenience stores, this section presents an analysis of the limited UPC data that were collected.

During the eight-week data collection period, the DCSU file records in the four stores captured information on 3,270 transactions, of which 617 (18.9 percent) involved full or partial payment with food stamp benefits. Of these 617 food stamp purchases, only 220 (35.7 percent) included items that were scanned. For the rest of the purchases, either the scanned data were corrupted, the store clerk skipped the scanning and just entered the department code and price of the item, or none of the items purchased had UPC codes.

A total of 1,500 items were purchased in the 220 food stamp transactions with some UPC data. Nearly 59 percent of these items were scanned. Of the 882 scanned items, 298 unique items were purchased. Exhibit 5-26 presents a listing of the product categories for these items, together with the number and percentage of items purchased within each category, as well as the total dollar amount and percentage of dollars spent within each category.

Based on this incomplete sample, it appears that soft drinks and salty snacks were the most popular items purchased with food stamp benefits at these stores, representing 20.6 and 10.5 percent, respectively, of the total value of scanned items. As a group, grain products also were popular, representing 13.8 percent of total value. One must keep in mind, however, that these “findings” are suggestive at best. First, the data are too incomplete to be representative of food stamp recipient buying patterns at even these four stores. Second, some of the items (e.g., tobacco) were not necessarily purchased with food stamps, because the sample includes “combination-tender transactions,” or those in which both food stamps and another tender (e.g., cash or check) were used to pay for the entire purchase.

**Exhibit 5-26****Items Purchased in FSP Transactions at DCU Stores**

Product Category	Number of Items	Percent of Items	Dollar Value	Percent of Value
<b>MILK, CHEESE, CREAM</b>	<b>14</b>	<b>1.6%</b>	<b>\$34.62</b>	<b>3.6%</b>
Milk	9	1.0%	\$16.87	1.7%
Cheese	5	0.6%	\$17.75	1.8%
Cream	-	-	-	-
Yogurt	-	-	-	-
<b>FRUIT AND VEGETABLES</b>	<b>13</b>	<b>1.4%</b>	<b>\$20.57</b>	<b>2.1%</b>
Fruit	1	0.1%	\$1.39	0.1%
Juice	9	1.0%	\$12.51	1.3%
Vegetables	3	0.3%	\$6.67	0.7%
<b>PREPARED FOODS</b>	<b>26</b>	<b>2.9%</b>	<b>\$49.98</b>	<b>5.1%</b>
Frozen/Refrigerated	1	0.1%	\$2.29	0.2%
Deli/Salad bar	-	-	-	-
Grain Based	13	1.5%	\$20.31	2.1%
Meat Based	-	-	-	-
Soup	-	-	-	-
Diet	-	-	-	-
Baby Food	12	1.3%	\$27.38	2.8%
<b>MEAT AND MEAT ALTERNATIVES</b>	<b>32</b>	<b>3.6%</b>	<b>\$55.14</b>	<b>5.7%</b>
Red meat	-	-	-	-
Poultry	-	-	-	-
Fish	3	0.3%	\$6.57	0.7%
Lunch meats	10	1.1%	\$20.20	2.1%
Eggs	-	-	-	-
Legumes	4	0.5%	\$9.16	0.9%
Nuts	3	0.3%	\$3.19	0.3%
Meat, NFS*	12	1.3%	\$16.02	1.6%
<b>GRAIN PRODUCTS</b>	<b>73</b>	<b>8.1%</b>	<b>\$134.59</b>	<b>13.8%</b>
Breakfast cereals	13	1.5%	\$43.17	4.4%
Flour, rice, pasta	19	2.1%	\$46.39	4.8%
Bread	20	2.2%	\$33.30	3.4%
Bakery products	21	2.3%	\$11.73	1.2%
<b>OTHER FOODS</b>	<b>738</b>	<b>82.4%</b>	<b>\$682.64</b>	<b>69.9%</b>
Fats, oils	11	1.2%	\$22.23	2.3%
Sugar, candy	49	5.5%	\$41.03	4.2%
Seasonings	11	1.2%	\$19.70	2.0%
Soft drinks, ades	268	29.9%	\$204.12	20.9%
Coffe, tea	3	0.3%	\$5.07	0.5%
Salty snacks	160	17.9%	\$106.56	10.9%
Cookies, cakes, pies	58	6.5%	\$40.78	4.2%
Ice cream, jello, pudding	12	1.3%	\$20.78	2.1%
Condiments	15	1.7%	\$11.65	1.2%
NFS	151	16.9%	\$210.72	21.6%
<b>Total purchases/redemptions</b>	<b>896</b>	<b>100%</b>	<b>\$977.54</b>	<b>100%</b>

\* NFS means not further specified.

Notes:

Percentages may not sum to 100 percent due to rounding.

These results are illustrative only; they are not generalizable to any food stamp population.

# Chapter 6

## Lessons Learned

The project described in this report is a feasibility study, designed to address the following questions:

1. Can retailers with scanning systems be persuaded to provide their scanner transaction logs to FNS for the purposes of research into the use of food stamp benefits? At what cost? With what limitations?
2. Is it feasible to collect similar scanner transaction data in stores which do not use scanning systems? At what cost? With what limitations?
3. Is it feasible to match scanner information on food stamp purchases to characteristics of the FSP recipients making the purchases? With what limitations?
4. What analyses of food stamp recipients' purchasing behavior can be supported with the scanned food purchase data that are collected?
5. What is the feasibility and expense of expanding data collection efforts to obtain more representative data?
6. How might scanner data be used in food consumption research?

The following sections address each question in turn, focusing on what has been learned to date from this project.

### 6.1 Collecting Data from Retailers That Have Scanning Systems

This project has demonstrated that it is feasible to persuade some retailers with scanning systems to provide their scanner transaction logs to FNS for research purposes. Furthermore, the retailers provided the data at what seems a reasonable price of \$1,000 per chain. Although attempts were made to determine the actual costs retailers would incur to provide food purchase data, the retailers who agreed to participate in the study either could not or would not provide a cost estimate. They readily agreed, however, to the \$1,000 reimbursement proposed by Abt Associates and CCMI.

The project revealed a few technical limitations to collecting scanner data on purchased food items. Assorted problems with telecommunications systems and human error resulted in the loss of some data, and one should probably expect that similar problems would occur in any future efforts to collect scanner data. In addition, there were technical obstacles in terms of reading files prepared in different formats from the various store systems encountered. These obstacles, however, were overcome and should not pose major difficulties in any future efforts to collect scanner data from retailers.

In thinking about the feasibility of collecting data from scanning stores, one needs to remember that the two supermarket chains that participated in the study were collecting and storing item-level data on a transaction basis. This is important. Retailers with older POS systems may not retain data at the transaction level. Collecting transaction-level data from such retailers would be much more difficult technically, involving upgrades to the retailer's POS software and, perhaps, hardware. The feasibility of collecting data in this POS environment could not be tested during this project, although we had hoped to do so. In the end, however, no retailers needing upgrades were among the group of participating retailers. We do note, however, that the technical problems of collecting transaction-based data from retailers with older POS systems will diminish over time as more of these retailers upgrade to newer systems on their own.<sup>1</sup>

The greatest problem in collecting data from stores is not technical; instead, it is getting the initial support of retailers. Most retailers approached during the recruiting phase of the project failed to respond to our inquiries. One had the feeling that store owners and chief executive officers simply did not want to be bothered by a government request to voluntarily participate in the proposed study. Most of the lack of support seemed to arise from indifference to the project or the competing demands for time and resources. In some instances, however, the reason was more philosophical, with retailers opposed to government use of confidential data. Indeed, the refusal of Chain B to provide non-food stamp data is a case in point. Unless a government regulation requires the provision of food stamp scanner data, many stores are likely to refuse to provide scanned food purchase data for research purposes.

## **6.2 Collecting Data from Retailers without Scanning Systems**

The outlook is not very promising for collecting data on purchased items from non-scanning stores. The project did show that it is feasible to persuade some retailers to install a stand-beside data collection scanning unit, or DCSU. (The reimbursement offer of \$2,500 per store for a six-week data collection effort aided the recruiting effort.) It was difficult, however, to get the four stores with DCSUs to use them properly or consistently. After the data collection period was over, the four store owners said the biggest problem was having to double-enter information about each purchased item, first on their own cash register and then on the DCSU. This suggests that an easier-to-use DCSU, as described in the next paragraph, might be used more often and might provide usable data. Until such stores adopt their own scanning systems, however, it will be a problem to collect item-level information on what food stamp recipients are buying in these stores with their food stamp benefits. Such efforts will always be time-consuming and expensive, if only because a price file of the store's inventoried items will need to be created and updated.

Despite the above concern, it may be worth trying to collect data in non-scanning stores again, but this time with a redesigned DCSU. To eliminate the double-entry process, we would suggest combining the DCSU with cash registers already in use, if possible. Barring that, we would suggest replacing a store's current register with a full turn-key DCSU system for the duration of the data collection period. The replacement system would be a fully-integrated POS system with scanner, cash drawer, receipt printer,

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<sup>1</sup> Upgrades to newer POS systems may occur sooner than would normally be expected as retailers ensure that their POS systems are Y2K compliant (i.e., that the systems are able to read and process dates correctly beyond January 1, 2000).

and pole display.<sup>2</sup> The challenging task would be to make it easy for store employees to update and maintain the price file. In addition, because the DCSU would now become the store's primary cash register, one would need to provide very rapid service times in the event of equipment problems.

As shown in Exhibit 6-1, however, nearly 80 percent of FSP benefits are spent in supermarkets, and an estimated 88 percent of supermarkets have scanners. This means that, as shown in the last column of the exhibit, nearly 70 percent of all food stamp benefits are redeemed in supermarkets with scanning systems. Across all store types, an estimated 74 percent of all food stamp benefits are redeemed in scanning stores. So the question here is, how much time and expense should be spent trying to collect data from stores that redeem only about 26 percent of all FSP benefits? As discussed later in the chapter, the 26 percent figure is large enough to worry about the representativeness of data collected only at stores with scanning systems. There is also a policy interest in learning how these stores serve the buying needs of food stamp recipients. Therefore, even though it will clearly be difficult to collect data from non-scanning stores, it may be worth applying the lessons learned from this first test of the DCSU concept to a second effort.

#### Exhibit 6-1

##### Estimated Scanning Capabilities of FSP-Authorized Stores, by Store Type

Store Type	Number of Authorized Stores <sup>a</sup>	Percentage of Total Stores	Percentage of Total Redemptions	Estimated Percent with Scanners <sup>b</sup>	Estimated Percentage of Scanned Redemptions <sup>c</sup>
Supermarket	31,295	18.0	79.2	88	69.7
Military commissary	244	0.1	0.1	88	0.1
Medium to small grocery	44,691	25.7	10.9	20	2.2
Convenience store	47,665	27.4	3.0	25	0.8
Grocery/Gas station	21,792	12.5	1.1	10	0.1
Other grocery combination	4,844	2.8	1.1	60	0.7
Specialty food	15,619	9.0	3.6	10	0.4
General store	2,488	1.4	0.3	10	0.0
Grocery/Restaurant	861	0.5	0.1	5	0.0
Health/Nutrition food	1,580	0.9	0.1	10	0.0
Other stores	2,621	1.5	0.4	10	0.0
ALL STORES	173,700	100.0	100.0	32	74.0

a STARS data from January 1998

b Based on recent trade publications and judgement of independent contractor.

c The estimates assume that, within a given store type, the average FSP redemption level of scanning stores is equal to that for non-scanning stores.

Percentages may not sum to 100.0 due to rounding.

2 The existing DCSUs could be upgraded to a complete POS system for about \$912 per unit for a cash drawer, printer, and pole display. For additional units, an Omron RS6500-based system could be purchased for about \$5,700 per unit, assuming VAR (value added reseller) pricing. Retail pricing would be about 20 to 45 percent greater.



## 6.3 Matching Scanner Data to Recipient Characteristics

The question of whether scanner data on food stamp purchases can be matched to recipient characteristics gets the clearest affirmative answer of this feasibility study. For food stamp purchases made by Georgetown County recipients at the seven participating supermarkets, we first matched scanner data to records in the FNS ALERT file. The match rate was 96.8 percent. If one excludes the supermarket scanner transactions that were lost due to telecommunications problems, the match rate increases to over 98 percent. Our strategy of matching file records based on EBT purchase amount and the place and time of the transaction proved successful in most cases. Some problems were encountered due to differences in clock time between systems, and other problems occurred when retailer purchase amounts did not match EBT transaction log amounts.<sup>3</sup> These problems were overcome, however, and a very high match rate was achieved.

Once we matched ALERT file records to the scanner data, we used information on EBT card numbers from the ALERT data to merge in recipient data from South Carolina's program eligibility file. No match could be found for about 12 percent of the FSP households shopping at the eleven stores. We believe, however, that a nearly 100-percent match rate would have been obtained if we had requested the state file near the end of the data collection period (to capture information on new entrants) and had requested that all records be included in the extract, not just records of active recipients. In the end, data on recipient characteristics were matched to 91 and 95 percent, respectively, of the supermarket and DCSU EBT transactions for which we had scanner data.

## 6.4 Analyses Supported by the Data

Because we were able to collect a large amount of scanner data on FSP and non-FSP purchases in supermarkets, the project has demonstrated the feasibility of answering, at least in part, two key policy questions: (1) what are food stamp households buying with their program benefits? and (2) how do food stamp purchases compare to non-food stamp purchases? Within these two areas of policy interest, the project has demonstrated the feasibility of looking at such detailed information as:

- How are benefits allocated across major product categories, and how does this compare to purchases by other customers?
- To what extent do food stamp recipients purchase store-brand items instead of costlier major-brand items, and how does this compare to purchases by other customers?
- To what extent do food stamp recipients purchase items in larger sizes instead of costlier (on a per-unit basis) small-size items, and how does this compare to purchases by other customers?

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<sup>3</sup> As noted in Section 4.4, retailer purchase amounts could exceed EBT transaction log amounts if a combination of FSP and other tender was used for the purchase. Also, the total dollar amount of two consecutive retailer records sometimes equalled the dollar amount of a single EBT transaction.

- What is the nutrient level of items purchased with food stamp benefits (within selected product categories), and how does this compare to purchases by other customers?

Furthermore, because we were able to link the characteristics of food stamp households to items purchased with food stamp benefits, the study has demonstrated the feasibility of looking at variations in the above purchasing patterns for subgroups of the food stamp population.

All of the above analyses, however, were limited by data problems. Most obviously, the small number of stores that participated in this phase of the study means that **the analysis results are not representative of food stamp recipients' buying patterns**. Instead, the results show what types of analysis are feasible with scanner data; they also can be used to generate hypotheses about buying behavior that could be checked in a larger study with a more representative group of stores. Another data-related problem is that the comparison of FSP and non-FSP purchases was limited to just one supermarket chain because the other chain refused to provide data on non-FSP purchases. Data difficulties also prevented analyses of how purchasing patterns vary by urban/non-urban location and item prices. Finally, due to problems collecting data from non-scanning stores, the study was unable to examine how food stamp purchasing patterns vary by store type. Especially disappointing was the inability to obtain a more complete picture of what food stamp recipients buy at convenience stores and small, neighborhood grocery stores.

The limited number of stores participating in the data collection also precluded any household-level analysis of buying patterns. That is, we were able to capture information on **all** monthly food stamp purchases for only a small, non-representative sample of recipients. Part of the problem is that, even in a county with a relatively limited number of program-authorized stores, food stamp recipients shop at multiple stores during the month. This suggests that it will often be quite difficult to capture complete household-level data unless participation rates by retailers are quite high within a given area.

Nevertheless, even with these data-related problems, the project has shown that it is possible to advance considerably our understanding of food stamp purchasing patterns. Prior to this study, the only available information on what food stamp households purchase with their benefits was survey-based. This study has shown the potential for collecting more accurate and detailed information.

## 6.5 Feasibility of Expanding Data Collection Efforts

This project was originally envisioned as having two phases. During the first phase, scanned food purchase data were to be collected from a small number of retailers in a single market area. Then, if the first phase demonstrated the feasibility of collecting and analyzing scanner data (and if additional research funds were available), the second phase would expand data collection in the same market area to include more retailers. This second phase of the project would have several goals. First, by seeking to include more retailers, it would further test the feasibility of recruiting retailers to participate in a study of this kind. Second, by including more retailers, it would test the feasibility of collecting, processing, and

representative of the purchasing behavior of FSP recipients within the study area. After concluding the two phases, a final objective of the study was to assess the feasibility and expense of expanding data collection efforts to obtain more nationally representative data.

The first phase of the project is now complete. Although currently available information is not sufficient to assess the feasibility and expense of obtaining nationally representative data, we can use what has been learned to date to discuss the feasibility of future data collection efforts. We can also identify the major obstacles which must be overcome before representative data could be collected.

The major impediments to collecting representative scanner data are two-fold. First, many retailers with scanning systems will not be supportive of USDA attempts to collect and use these data to study the purchasing behavior of food stamp recipients. Second, a large number of FSP-authorized retailers do not use scanning systems. We address each problem below.

### **Retailer Recruitment Among Scanning Stores**

One cannot obtain a representative sample of scanner data, from any location, unless a reasonable number of stores with scanning systems agree to provide the needed data. The project has shown how difficult this can be. All may not be hopeless, however, because the number of retailers who refused to participate outright on ideological grounds was limited. Most retailers “refused” in a more indirect way, simply ignoring repeated requests for support for the project. It is possible that many of these retailers could be persuaded to participate, given sufficient time to build a relationship with the store’s senior staff. In addition, the fact that the first phase of this project has been completed might be viewed as setting a precedent by some retailers, making it less likely that they would refuse a future request.

Furthermore, a number of retailers we contacted during the first phase said they could not participate at that time due to a variety of reasons, including turnover in key staff and being in the midst of a POS upgrade effort. Although one cannot discount the possibility that some of these retailers were simply looking for an excuse not to participate, it is entirely possible that many of them would participate if approached at a more convenient time. What this does indicate, however, is that even among the group of retailers who would support USDA collection of scanner data in the future, some number of them at any given time will be unable to participate for various reasons.

The remaining question, of course, is what percentage of scanning stores would need to participate to provide representative scanner data for analysis? That is, what is the “reasonable” number of stores alluded to at the beginning of this section? Unfortunately, there is no straightforward answer. In thinking about the question, however, there are several factors to consider.

First, if the goal is to capture nearly complete food stamp purchasing information on a large and representative sample of FSP households, then the needed percentage of participating stores is probably high. Because most FSP recipients do not spend all of their benefits in one store, one can obtain a complete picture of buying behavior **at the household level** only if a large percentage of stores provide scanner data. If the goal instead is to learn what FSP households in general are buying with their food stamp benefits, without regard to linkage across multiple purchases, then a smaller percentage of participating stores would be acceptable.

Second, in thinking about the representativeness of data from a sample of stores, one is really more interested in the percentage of transactions and redemption dollars being captured in a data collection effort, not in the percentage of stores participating. All else equal, one is better off if the participating stores are high redeemers rather than low redeemers of food stamp benefits. Therefore, if one or two stores (or chains) that dominate a given market area agree to provide data, the data may be fairly representative even if the percentage of participating stores is low.

Third, this project has not been able to assess the extent to which buying behavior varies according to store type; both of the chains that participated were large supermarket chains. Therefore, to help ensure the collection of a representative set of scanner data, one should try to obtain participation across all types of stores (as identified by FNS store type categories) in a market area with scanning systems. This obviously would include grocery stores. In some market areas, it would also include specialty stores and convenience stores with scanning systems.

### **Data Collection at Non-Scanning Stores**

From Exhibit 6-1, we estimate that approximately 26 percent of food stamp redemptions are spent in non-scanning stores. Thus, nothing can be learned about one-quarter of all food stamp redemptions unless a method is developed for collecting item-level bar-code data from these stores. The DCSUs tested during the project were not successful for two reasons. First, store employees were unwilling or unable to use them on a consistent basis. Clearly, processing all sales twice—once on the DCSU and once on their own cash register—was difficult for them. Second, DCSU software problems made the units unnecessarily difficult to use, and corrupted some of the data that were collected.

Keeping these problems in mind, there are four alternative approaches one could take with respect to food stamp purchases in non-scanning stores. First, one could simply ignore this component of the food stamp market. At an estimated 26 percent of all benefits redeemed, however, it is a large component to ignore. Furthermore, there is at least an *a priori* belief that items purchased in these stores are quite different from items purchased in stores with scanners, which tend to be supermarkets and large grocery stores. Thus, one risks losing information about a potentially very interesting component of food stamp purchasing behavior, and introducing bias into depictions of overall purchasing patterns.

Second, one can simply wait until more stores install scanning systems, and then try to collect scanner data from these stores. This is not much different from the first alternative, but it does point out an expectation that more and more stores will use scanners in the future. It also suggests a possible future research question for data collected from scanning stores—do items purchased with food stamp benefits in stores with recently-installed scanners differ from items purchased in stores with older scanning systems? Such an analysis might indicate whether and how recent converts to scanning differ from other scanning stores, and hence indicate the type of error that results when information from non-scanning stores cannot be obtained.

Third, one can try to encourage non-scanning stores to install and use scanners. As part of this project, CCMI was prepared to offer technical assistance to any non-scanning store that was willing to install a new POS system and participate in the project. As it turned out, no stores in Georgetown County were identified as being at this stage.

Finally, further attempts could be made to collect scanner data with a DCSU. As noted earlier in this chapter, the DCSU approach would have to be modified to improve the chance of successful data collection. At a minimum, there would need to be more extensive field testing of the units before data collection began, and more rapid inspection of collected data to verify that the units were being used and data collected properly. Finally, there should probably be greater on-site support for the retailers, particularly at the start of the data collection period. By staying on-site, project staff could help ensure that the systems were being used and that initial training had been adequate.

### **Cost of Collecting Scanner Data**

Little prior evidence is available for estimating the cost of collecting scanner data. Although several companies collect scanner data for market research purposes, no information is available on their cost structures. From the experience to date in Georgetown County, we have the following cost information:

- The two supermarket chains that participated in the study received reimbursement of \$1,000 each for agreeing to provide six weeks of scanner data files to project staff. Ultimately, eight weeks of data were collected, but the stores did not request further compensation.
- The four non-scanning stores that participated in the study using DCSUs received \$2,500 each for agreeing to collect UPC data with the DCSUs for six weeks. As with the supermarkets, these stores did not request further compensation when the data collection period was extended to eight weeks, perhaps because the extension was needed due to inconsistencies in their use of the DCSUs.
- Seven DCSUs were used. The average cost of each DCSU was about \$4,000, although this represented a value-added reseller (VAR) pricing level. Retail prices for the same DCSUs would range between \$4,800 to \$5,800 per unit.
- The cost to contact retailers in the South Carolina study site, elicit their cooperation for the study, and negotiate agreements is estimated at roughly \$57,000.<sup>4</sup>
- Estimated data collection costs, excluding the above-mentioned reimbursements to stores, were approximately \$106,000. Nearly all of this cost is related to data collection at the four DCSU stores that participated in the study; it includes preparation of the DCSU software, creation of item price files for the four stores (which involved manual scanning and key entry of information about all unique items in the store's inventory), training of store personnel, and weekly trips to South Carolina to download data from the DCSUs and assist store personnel.

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<sup>4</sup> This cost estimate was derived by looking at the monthly expenditures by CCMI during the period of retailer contacts and recruitment. Prior to June 1997, CCMI was contacting retailers in 17 potential study sites. Total costs of \$55,700 during this period have been divided by 17 to estimate costs related to Georgetown County. In June, CCMI split its time contacting retailers in South Carolina and Kansas, so 50 percent of the total June cost of \$15,400 is assigned to Georgetown County, as are all costs (\$46,000) during July 1997 and thereafter. The cost estimate of \$57,000 includes travel expenses associated with a trip to Georgetown County to meet with the owners of several small, non-scanning stores to elicit their participation in the study.

- The estimated cost of processing the collected scanner files in order to build a database containing records from multiple stores was \$63,000, of which an estimated 50 percent was related to the DCSU stores. This cost does not include the expense of obtaining an extract of South Carolina's program eligibility file, EBT transaction log records, or merging these databases with the scanner data.

Taken together, the above costs total about \$267,000, of which approximately \$188,000 is attributable to data collection at DCSU stores. The remaining \$79,000 covered retail contacts, contract negotiations, data collection, and data processing at the two supermarket chains that had POS systems in place with optical scanners. On a per-chain basis, the average cost was \$39,500. To extrapolate these costs to possible future data collection efforts, one should use a somewhat lower figure—about \$30,000 per chain. Some of the costs incurred in the current study were for initial start-up tasks. These tasks included drafting a standard data collection agreement for use with retailers and writing programs for data processing. Such tasks would be much less expensive in subsequent data collection efforts.

As noted, most of the estimated cost of \$30,000 per chain is for contacting retailers, eliciting their cooperation, assessing the technical aspects of their POS systems, entering into an agreement with them, and collecting the data through weekly file transfers. This total cost per chain generally is not subject to economies of scale, so the \$30,000 estimate is appropriate for use in projecting costs regardless of the number of chains a future data collection effort might encompass.<sup>4</sup> If future data collection efforts were to cover a data collection period longer than a month or so, or involve multiple data collection periods (as in a "pre-post" research design with data being collected before and after some intervention), then estimated costs would increase somewhat to cover retailers' ongoing costs of file transfers. As long as retailers were willing to provide data to USDA "at cost," however, the average total cost per chain should not exceed \$35,000 or so.

To place this cost estimate in perspective, it is useful to compare it to the cost of a major recipient survey designed to collect nationally representative data on food shopping patterns, food expenditures, and household food use. The National Food Stamp Program Survey (NFSPS) was conducted in 1996-97. The total cost of the survey was about \$2.5 million, of which an estimated \$1.7 million was spent on instrument development, OMB clearance, sample preparation, interviewer training, and data collection.<sup>5</sup> Thus, at \$35,000 per chain, one could collect scanner data from approximately 50 store chains for about the same price as the NFSPS. Each chain, of course, would represent many individual stores; we estimate an average of about 43 stores per supermarket chain.<sup>6</sup> With this estimate, one could collect scanner data at about 2,150 supermarkets for the same price as the NFSPS. This sample would represent nearly 7

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4 Economies of scale are present, however, at the store or transaction level because most costs remain the same regardless of how many stores are in the chain or how many transactions are captured.

5 Cost estimate based on January 8, 1999 telephone conversation with FNS project officer for the NFSPS. The NFSPS included a sample of eligible non-participants, which is an expensive group of households to identify. It is not known how much less expensive a survey of just FSP participants would be.

6 The figure of 43 stores per supermarket chain is based on a six-state extract from the STARS database. The states are Colorado, Kansas, Maryland, New Mexico, South Carolina, and Wyoming. Chains having fewer than ten stores have been excluded in computing the average, which skews the average upward. Because the six states are not contiguous or highly urbanized, however, the average also may be biased downward. Within the six states, supermarkets in chains with ten or more stores represent 66 percent of all supermarkets and 72 percent of all supermarket redemptions.

percent of all FSP-authorized supermarkets (or 1.2 percent of all FSP-authorized stores) and almost 6 percent of all FSP redemptions.<sup>7</sup>

## 6.6 Potential Research Using Scanner Data

This section presents several ideas for possible next steps in the use of scanner data for research purposes. The examples include evaluation of USDA initiatives to change shopping behavior, gaining more information on FSP expenditure patterns, and “methodological” studies designed to better assess the research value of scanner data or improve the usability of either scanner data or survey data. In evaluating these ideas, one needs to keep in mind that obtaining fully-representative scanner data on FSP expenditures is not possible at this time. Many stores do not use scanners, and stores with scanners may or may not cooperate with USDA efforts to collect scanner data for research purposes.

These coverage issues point out another difference between survey-based expenditure data and scanner data. In surveys the unit of observation is the surveyed household or individual. For scanner data the unit of observation is the food transaction. To capture all food stamp purchases for a sample of households would require nearly complete participation by scanning stores in a market area. Lacking such complete coverage and participation, it is better to view scanner data as representing a cross-section of FSP purchases for research purposes rather than an assemblage of transactions for given households.

### Effects of USDA Initiatives on Food Expenditures

Large-scale national surveys of food stamp recipients have the advantage of providing nationally representative data. Their sample designs, however, do not support the collection and analysis of data within specific states or market areas. Thus, special-purpose surveys would need to be developed and fielded in order to assess the impacts of any targeted efforts by USDA to change food shopping patterns. Examples of such initiatives might include a nutrition education campaign or an effort to help food stamp recipients become more price conscious when food shopping.

Such initiatives might be better assessed through analysis of scanner data. One could use scanner data collected from area stores both before and after the initiative to measure changes in purchasing behavior. Certainly, scanner data offer a more accurate and detailed record of what recipients are buying with their program benefits than survey data.<sup>8</sup> For this reason, scanner data would be more likely than survey data to detect a small treatment effect.

Although the lack of data capture in non-scanner stores would be a problem in any effort to evaluate the impacts of a USDA initiative, the magnitude of any bias arising from incomplete coverage would likely be small (assuming all scanning stores agreed to participate). Scanning stores redeem an estimated 74

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7 The estimated number of program-authorized supermarkets is 31,295. If supermarket chains represent 66 percent of all supermarket stores, then an estimated 20,655 supermarkets are part of a chain. A sample of 2,150 supermarket chain stores is 10.4 percent of this universe. Supermarkets redeem 79.2 percent of FSP benefits. If supermarket chain stores represent 72 percent of all FSP redemptions, then supermarket chain stores redeem 57 percent of all FSP benefits (i.e.,  $0.72 \times 79.2$  percent). A 10.4 percent sample of supermarket chain stores would then redeem an estimated 5.9 percent of all FSP benefits.

8 Unlike a survey, of course, scanner data could not provide any information about whether the recipient had heard about the initiative being evaluated.

percent of FSP benefits, so any impacts of an initiative should show up in these stores. In addition, because the main cost of collecting scanner data is the up-front negotiations with stores and working out the technical details of data transfer, the marginal cost of extended data collection should be low. This means that any “decay” of impacts could be measured fairly easily by collecting scanner data some time after the initiative had ended. In comparison, three waves of a survey would be needed to capture baseline data, post-intervention data, and data on potential decay effects, with little cost savings available during multiple survey waves.

### **Monitoring of Long-Term Trends in Food Purchasing Behavior**

In the section above we noted that the marginal cost of extended data collection should be low in stores with scanning systems. One can envision negotiating with a sample of scanning stores to collect scanner data at periodic intervals over an extended period. For instance, one might collect one month’s worth of data once or twice a year for 10-20 years. During each cycle of data collection, the scanner data would be merged with EBT transaction data and state eligibility files to match household demographic information to purchase behavior. Such a project could monitor long-term changes in the food purchase behavior of food stamp recipients. If the stores (or a subsample of stores) agreed to provide data on non-food stamp transactions as well, one could examine whether differences in purchasing patterns between food stamp recipients and the rest of the population were changing over time.

Issues of sample representativeness do not go away in such a research project, but they become somewhat less of a concern when one focuses on **changes** over time within a given group of stores. Longitudinal data from even a non-representative sample of stores should identify long-term changes in buying habits. The greater concern is how changes in the population of interest might confound the analysis, although household-level data on recipient demographics should allow one to control for the effects of such changes.

### **Effects of Workforce Participation on Food Purchasing Behavior**

With current efforts to increase the workforce participation of food stamp recipients, one area of interest to USDA is how participation in the workforce affects diet and nutrition. For instance, if program recipients have less time to plan for and prepare meals, is there a shift toward consumption of more quick-to-prepare items like frozen dinners or hot dogs? Or, with less at-home supervision of children, is there an increase in consumption of snacks and soft drinks? Although scanner data do not directly measure what is being consumed, they could be analyzed to see whether the above hypotheses are supported by what is being purchased with FSP benefits. This could most easily be examined by comparing food expenditure patterns between FSP households with different levels of workforce participation, especially for households with and without children.

### **Food Stamp Expenditures at Different Store Types**

One question of interest to USDA is how different types of program-authorized stores meet the needs of FSP recipients. For instance, when shopping at convenience stores with their food stamp benefits, do recipients purchase basic commodities like eggs, bread and milk, or do they buy snacks and chips? Additionally, to what extent do recipients pay a price premium for the convenience offered by small, neighborhood-based food stores? Some information on store choice and prices was collected by the NFSPS, but scanner data offer the possibility of more accurate data.



There is a problem, however, with store coverage when considering using scanner data to examine food stamp expenditures at different store types. As was shown in Exhibit 6-1, small, neighborhood stores like convenience stores appear to be among the least likely stores to use POS systems with optical scanners. Thus, at this point in time, one could not readily obtain scanner data to conduct a representative study of how food stamp expenditures vary by store type.

Although the coverage problem could be addressed with use of DCSUs in non-scanning stores, the feasibility study suggests that an easier-to-use DCSU would need to be developed before such an approach could be successful. Such a development and testing effort, including use of possible new technologies, might be an area for future research. Even if successful, however, one should expect data collection at non-scanning stores to be expensive. In the feasibility study, the total cost to collect data at four non-scanning stores was \$188,000, or \$47,000 per store. The expense of weekly trips to collect data could be avoided by electronic file transfers, but two very expensive cost components would remain in any application. First, a host price file would need to be built at the start of data collection and maintained thereafter. This would require scanning the store's inventory of products and key entering product and price information. Second, arrangements for on-site servicing of the DCSU would need to be made so retailers could be assured that any problems with the equipment would be fixed quickly.<sup>9</sup> Although some economies of scale could be expected as more stores within a service market were added, the savings over the \$47,000 per store estimate likely would be modest.

Even without coverage in non-scanning stores, preliminary analyses of food stamp expenditures at different store types could be conducted using scanner data from the limited number of large convenience store chains that have installed scanner systems. If coupled with scanner data from one or more supermarket and grocery store chains in the same market areas, one could compare both what was purchased with FSP benefits at different store types and the prices of similar items at different stores. When conducting such a study, however, one would need to remember that FSP purchases at large, convenience store chains with scanners probably do not represent FSP purchases at convenience stores in general, even those within the same market area. This, coupled with lack of nationally representative coverage, means that the results of such a study would be suggestive at best.

The lack of national coverage would be less of a problem if USDA wanted to track changes over time in how FSP recipients spend their benefits in different store types. For instance, if FNS implemented an education campaign to help recipients become more aware of pricing differences among different store types, scanner data from the market area(s) involved in the campaign could be collected and analyzed to determine the effectiveness of the campaign.

### **More Complete Expenditure Studies**

One problem with the scanner data collected during the South Carolina feasibility study is that they did not capture non-FSP expenditures at food stores by FSP households (except for food purchased with cash during mixed-tender purchases). With use of EBT cards, however, it might be possible to mimic a "loyalty card" program in selected markets. Loyalty card programs are store-based marketing programs

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9 This assumes that the newly developed DCSU would serve as a substitute for the retailer's current cash register, not as an additional POS device. The feasibility study suggests that store employees will not use a DCSU consistently if it is a stand-beside unit, especially during times when the store is busy.

that issue special cards to voluntary participants. The cards need to have some identification (e.g., a bar code) attached so the participant can later be matched with the purchase. Usually, price discounts are offered to promote the program and continued use of the card.

The idea would be to use the EBT card as a multi-store loyalty card. Bar-coded stickers could be affixed to the card and scanned whenever a purchase was made, regardless of whether the EBT card was being used to pay for that purchase. Alternatively, the cashier could swipe the EBT card through the POS card reader so that the EBT card number would be stored on the POS transaction log.

Such a project would expand the captured scanner data to include cash purchases made by FSP recipients as well as their food stamp purchases. Implementing such a project, however, would face difficulties. It would require cooperation among state FSP officials, the EBT vendor, participating retailers, and FSP recipients. Furthermore, USDA would probably need to fund some price discounts to induce FSP recipients to offer their EBT card even when not using their program benefits. If implemented, however

of meat loaf). Thus, the real question is whether it is worth building a nutrient database for food expenditure data, given the gap that often exists between what is purchased and what is eaten.

Another possible use of scanner data is to assess the accuracy of survey-based food expenditure data. Unless survey respondents keep receipts of their food purchases, such surveys must rely on respondents' recall ability. To assess the accuracy of survey expenditure data, one would need to negotiate agreements to collect scanner data from as many stores as possible within a market area, and then field a food expenditure survey within that same market. The survey should ask where food items were bought as well as their cost. The survey would have to limit its questions to food purchased with food stamp benefits. The survey data and scanner data could then be matched (based on EBT card or case identification number) and compared. Such a study could evaluate the extent of recall problems both for items purchased and their price.

Finally, given the concern about coverage of scanner data, another research option would be to more formally assess the potential representativeness of a national sample of scanner data. Toward this end a survey of program-authorized stores could be conducted to determine the characteristics of stores with and without scanning systems. For those stores with scanning systems, the survey could ask details about the manner in which scanner data are collected and stored (e.g., are scanner data retained at the transaction level?). For all stores, the survey could ask about future plans to install or upgrade scanning systems. Together with information on FSP redemption levels within the sampled stores and separate EBT data on the number and dollar value of FSP transactions across all store types, the survey information would support an assessment of how representative scanner data might be. The final issues to consider in such a study are whether stores with scanning systems would be willing to provide scanner data to USDA for research purposes, and at what cost. Although somewhat difficult to assess without actually trying to negotiate a data collection agreement, the survey should be able to provide a preliminary assessment of likely cooperation with efforts to collect scanner data.

# Appendix A

## FSP Research on Food Consumption

Research questions regarding food consumption often distinguish among food **expenditures**, food **use**, and food **intake**.<sup>1</sup> In surveys, food expenditures are usually measured at the household level for a specified period (e.g., one week). Data on food expenditures usually include food eaten away from home and meals ordered in, as well as food items purchased at grocery stores. The expenditure data may be collected either in aggregate or disaggregate form. In the latter approach, respondents are asked both about what they purchased and how much it cost, as opposed to a simpler question regarding total (aggregate) food expenditures over some period.

Food use surveys, in contrast, focus on the types, quantities, and prices of all foods used (rather than purchased) during a specified time period, whether eaten at home or away. Such data are usually preferred to food expenditure data because they include non-purchased food items (e.g., home-grown food and gifts) and they avoid problems of how to handle the “food storage” problem when evaluating diets. The latter problem arises because, with food expenditure data, one does not know when food purchased this week will be eaten. Similarly, part of this week’s food use may be taken from storage. Data on food use bypass the problems introduced by the temporal mismatch between food purchase and food use.

Food intake data represent the types and quantities of food actually eaten during a specified time frame. They differ from food use data in that they are usually collected at the individual rather than household level. They also exclude food used but not consumed (e.g., baking a cake for a friend, preparing a casserole for next week’s meals).

Both food use and food intake data are often converted to measures of nutrient value using databases that match nutrients to specified food products. In assessing diet or nutrition levels, food intake data are generally considered superior to food use data because they more directly measure what is consumed. Collecting food intake data, however, is typically more expensive than collecting food use data, and it imposes more burden on respondents. Similarly, when assessing diet or nutrition, food use data are generally viewed as superior to food expenditure data. Again, however, the more valuable food use data are typically more expensive and burdensome to collect than expenditure data.

The following sections provide brief summaries of some of the major surveys providing information on food consumption.

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<sup>1</sup> These distinctions are elaborated upon in Thomas Fraker and Sheena McConnell, “Recommendations on Sources of Survey Data on Food Consumption to Meet FNS’ Research Needs,” Washington, DC: Mathematica Policy Research, Inc., August 28, 1992.

## **Nationwide Food Consumption Survey (NFCS)**

A major survey source of information on food consumption has been USDA's Nationwide Food Consumption Survey (NFCS). This survey, which has been conducted by the Agricultural Research Service (ARS)<sup>2</sup> approximately every ten years, was last conducted in 1987-88. The previous survey was conducted in 1977-78. The NFCS is designed to collect information about the types, nutrient content,<sup>3</sup> and money value of food used in US households and about the food intake of individuals while at home and away from home. As such, it is one of the few major surveys to collect data on all three measures of food consumption.

The 1987-88 NFCS consists of two samples. The basic sample is designed to represent all households in the 48 contiguous states; the second sample represents low-income households (i.e., total income less than or equal to 130 percent of the poverty level). The planned sample sizes for the 1987-88 NFCS were 6,000 for the basic sample and about 3,500 for the low-income sample. Response rates to the survey, however, were very low.

## **Continuing Survey of Food Intake by Individuals (CSFII) and the Diet and Health Knowledge Survey (DHKS)**

In between the years of the decennial NFCS, the USDA's Agricultural Research Service sponsors the Continuing Survey of Food Intake by Individuals (CSFII) and the Diet and Health Knowledge Survey (DHKS). These surveys were most recently conducted in 1994 through 1996.<sup>4</sup> The CSFII includes a nationally representative sample of individuals who, during in-person 24-hour recall interviews, provide aggregate information on household food expenditures and detailed information on individual food intakes for two nonconsecutive days. The DHKS, which is a telephone interview administered about two weeks after the CSFII interview, collects information about knowledge and attitudes toward dietary guidance and health. Both surveys oversample the low-income population. The annual survey sizes are roughly 5,000 individuals for the CSFII and 2,000 adults for the DHKS.

## **Third National Health and Nutrition Examination Survey (NHANES III)**

Between 1988 and 1994, the National Center for Health Statistics (NCHS) of the Centers for Disease Control and Prevention conducted the Third National Health and Nutrition Examination Survey (NHANES III).<sup>5</sup> This survey was conducted on a nationally-representative sample of nearly 34,000 individuals age two months and older. It was designed to obtain information on the health and nutritional

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2 Formerly the Human Nutrition Information Service (HNIS).

3 Data on nutrient availability and intake are derived from quantities of food used at home and food intake using the HNIS National Nutrient Data Bank.

4 The CSFII and DHKS also were conducted in 1989 through 1991. The CSFII was conducted in 1985 and 1986 as well.

5 Earlier NHANES surveys were conducted in 1971-74 and 1976-80.

status of the U.S. population through interviews and direct physical examinations. The survey collected food consumption data by asking how often in the month before the interview respondents consumed food in 60 different groups. Detailed food intake data were collected for the prior 24 hours for all respondents. Additional food intake data were collected at two later points for respondents aged 50 or older.

## **Integrated National Food and Nutrition Survey for Year 2000**

Plans are now in place to combine the CSFII and NHANES samples and to integrate the two surveys in the future. The Integrated National Food and Nutrition Survey for Year 2000 will complete interviews with a nationally-representative sample of 11,000 persons of all ages.

## **Cash-Out Studies**

The USDA has sponsored a number of evaluations to assess the impacts of cashing out FSP benefits. The first study examined a demonstration in which benefits for elderly recipients and recipients receiving Special Supplemental Income (SSI) were cashed out in nine sites in 1980. The second study looked at cash-out in Puerto Rico when the Commonwealth replaced the FSP with the Nutritional Assistance Program (NAP) in 1982. In the mid- to late 1980s, cash-out demonstrations took place in Washington State, San Diego, and Alabama.

Each evaluation of cash-out included a recipient survey. All six evaluations (two demonstrations in Alabama were studied) looked at the effects of cash-out on food expenditures, and all but the SSI evaluation and one of the Alabama evaluations looked at impacts on food use. The Puerto Rico study examined the effects of cash-out on dietary intake. Finally, one of the Alabama studies and the Washington State and San Diego evaluations assessed impacts on nutrient availability. Sample sizes were generally in the 1,200 to 2,400 range.

## **National Food Stamp Program Survey (NFSPS)**

USDA recently sponsored the National Food Stamp Program Survey (NFSPS), the first nationally representative survey of FSP recipients. Conducted in 1996-97, the NFSPS includes three sample components: in-person interviews with 1,100 FSP households, telephone interviews with another 1,000 FSP households, and 1,100 telephone interviews with low-income households. The survey collected information on program access for FSP participants and other low-income households, stigma and customer service, access to stores, and food security and nutrient availability. Follow-up interviews with 1,100 FSP households collected detailed data on food shopping patterns, food expenditures, and household food use. This included a detailed enumeration of types, quantities, source and prices of foods used in the previous seven days.

## **Appendix B**

### **Sample Recruitment Letter to Retailers**

Dear (store owner):

The United States Department of Agriculture (USDA) is sponsoring a research study of the purchasing habits of food stamp recipients. The study will be conducted within a single, medium sized market area with a variety of different retailer types, from supermarkets to convenience stores. Your company has been identified as a retail food chain operating in one or more of the potential market areas under consideration for the study. We would therefore like to talk to you about the study and to gain your support if a site where your stores are located is selected.

The study will explore the feasibility of using scanner technology to collect data on food items purchased with food stamp benefits. Consumer Card Marketing, Incorporated (CCMI), of Braintree, Massachusetts, in conjunction with Abt Associates Inc., the prime contractor for this study, will conduct the field research and assist in preparing the analysis files.

There are two primary reasons why the Food and Consumer Service (FCS) of USDA is undertaking this effort. First, improving the nutritional status of low-income households is a mission of the Food Stamp Program. Second, information on what food stamp households buy is very useful in measuring the program's effectiveness in meeting its mission and in designing more effective nutrition assistance programs. In the past special household surveys were used to collect information. Today, however, scan data are deemed to be more reliable and timely.

This study will be conducted over a six-week period this summer. During the study period, we will seek to collect transaction-based scan data for all food stamp purchases and a sample of other purchases. In stores with scanner systems, we will seek a copy of the store's transaction log for analysis. In other stores, we wish to explore the possibility of installing a stand-beside data collection scanning unit (DCSU) for the six-week study.

All information will be kept in strict confidence. Once the transaction data are combined with the food stamp households' demographic information (using information from the EBT system and the state's program files), all store and household identifiers will be stripped from the database. No store or household-specific results or data will be reported or provided to FCS.

We ask for your support and participation in this important pilot study. If a site where you operate is selected and you agree to participate in the study, Abt Associates Inc. will reimburse you for the direct costs involved in preparing a copy of your transaction log. In addition, we at CCMI (Consumer Card Marketing, Inc.) will provide any technical assistance required in generating a log from your current POS (Point of Sale) system.

I will call you next week to schedule a convenient time to speak with you and/or the appropriate person on your management staff, and explain the study in further detail. I will also be able to address any questions you may have.

Thank you for your support. We look forward to working with you.

Sincerely,

(Signed)  
Senior Vice President



# Appendix C

## Sample Data Collection Agreements

The first agreement that follows was used for the two supermarket chains that participated in the study. The second agreement was used for the four stores that used data collection scanning units (DCSUs).

**Data Collection Agreement Between  
ABT ASSOCIATES INC.  
and  
[SUPERMARKET CHAIN]**

Abt Associates Inc. and [chain] agree as follows:

1. Abt Associates Inc., a Massachusetts corporation headquartered in Cambridge, Massachusetts, has entered into a contract with the United States Department of Agriculture, Food and Consumer Service (FCS) to study the feasibility of using scanner technology to collect data on food items purchased with and without food stamp benefits; and
2. Abt Associates Inc. has obtained the services of Consumer Card Marketing, Inc. (CCMI) of Braintree, Massachusetts, as a subcontractor to conduct the field research and assist in collecting the scanner data and preparing the analysis files; and
3. Georgetown County, South Carolina, has been selected as the project's study site; and
4. [Chain] agrees to participate in the above-named study and to provide item-level scanner data to CCMI for the period starting on or about August 20, 1997 and ending on or about October 10, 1997. The scanner data will be for all purchases made during this period at the following stores:

[store  
address  
address]

and

5. The initial evaluation of [chain's] operating system's environment indicates that [chain] can provide scanner data to CCMI without the need for additional hardware or software modifications at the point of sale (POS). Ten blank computer tapes and mailers will be needed, however, in order to provide scanner data. These materials will be provided to [chain] by CCMI; and
6. Abt Associates Inc. will pay [chain] the fixed sum of \$1,000 at the conclusion of the data collection period to compensate for efforts involved in gathering the aforementioned scanner data. [Chain] will

provide the scanner data to CCMI in a mutually agreed format on a weekly basis for the time period involved; and

7. The purpose of the study is to determine participant food purchasing patterns and not the compliance of food retail stores with federal or state Food Stamp Program regulations; and

8. All parties agree that the data used for this study should remain confidential; and

9. All data provided by [chain] to Abt Associates Inc. or its subcontractor, CCMI, shall be used for the purposes of this study only and shall not be used for any other purposes without the written permission of [chain]; and

10. All original data tapes, once processed and used to create the database, shall be returned to [chain]; and

11. Although the study shall describe the purchasing patterns of participants based both upon participant and store demographics, individual stores shall not be referenced by name or address. Once the transaction data are combined with the food stamp households' demographic information (using information from the EBT system and the state's program files), all store and household identifiers will be stripped from the database. No store or household specific results or information will be reported or otherwise provided to any state or federal government agency; and

12. Data tapes are not a deliverable product required for submission by FCS, and no original data tapes will be provided to FCS at the conclusion of this study. CCMI shall retain all data necessary to comply with federal audit requirements pertaining to activities conducted under this study.

The above is agreed to by the parties as signed below:

**[Chain]**

**Abt Associates Inc.**

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Name: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Signature: \_\_\_\_\_

Signature: \_\_\_\_\_

**Data Collection Agreement Between  
ABT ASSOCIATES INC.  
and  
[DCSU Store]**

Abt Associates Inc. and [store] agree as follows:

1. Abt Associates Inc., a Massachusetts corporation headquartered in Cambridge, Massachusetts, has entered into a contract with the United States Department of Agriculture, Food and Consumer Service (FCS) to study the feasibility of using scanner technology to collect data on food items purchased with and without food stamp benefits; and
2. Abt Associates Inc. has obtained the services of Consumer Card Marketing, Inc. (CCMI) of Braintree, Massachusetts, as a subcontractor to conduct the field research and assist in collecting the scanner data and preparing the analysis files; and
3. Georgetown County, South Carolina, has been selected as the project's study site; and
4. [Store] agrees to participate in the above-named study and to provide item-level scanner data to CCMI for the period starting on or about August 21, 1997, and ending on or about October 10, 1997; and
5. CCMI will provide one data collection unit and scanner to [store] for purposes of capturing scanner data during the study period. During the week of August 18, 1997, CCMI will visit your store to do the following: install the data collection unit in a convenient and safe location jointly determined by CCMI and [store]; create an item data file from the current store inventory; and conduct a training session on how to use the data collection unit. Store staff will use the data collection unit during the study period to record item-level information and payment information about all consumer purchases. CCMI will periodically collect the recorded data during the study period. CCMI will retrieve the data collection unit and scanner on or about October 10, 1997; and
6. Upon return of the data collection unit, Abt Associates Inc. will pay [store] the fixed sum of \$2,500 to compensate for efforts involved in gathering the aforementioned scanner data; and
7. The purpose of the study is to determine participant food purchasing patterns and not the compliance of food retail stores with federal or state Food Stamp Program regulations; and
8. All parties agree that the data used for this study should remain confidential; and
9. All data provided by [store] to Abt Associates Inc. or its subcontractor, CCMI, shall be used for the purposes of this study only and shall not be used for any other purposes without the written permission of [store]; and
10. Although the study shall describe the purchasing patterns of participants based both upon participant and store demographics, individual stores shall not be referenced by name or address. Once the data

files are processed, all store and household identifiers will be stripped from the database. No store or household specific results or information will be reported or otherwise provided to any state or federal government agency; and

11. Data tapes are not a deliverable product required for submission by FCS, and no original data will be provided to FCS at the conclusion of this study. CCMI shall retain all data necessary to comply with federal audit requirements pertaining to activities conducted under this study.

The above is agreed to by the parties as signed below:

**[Store]**

**Abt Associates Inc.**

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Name: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Signature: \_\_\_\_\_

Signature: \_\_\_\_\_

## Appendix D

# Installation Guide and End-User Manual for Data Collection Scanning Unit (DCSU)

To support the installation and retailer use of the DCSU, CCMI had to create and document a standardized set of procedures. These procedural steps and programing elements are formalized here into an installation guide and end-user manual.

## UPC Codes: Data Processing Steps to Load Additional UPC Codes from Hand-Held Scanner

Plug the hand-held data scanner into its base/charger.

Attach scanner base/charger to notebook computer through serial cable provided.

Make sure the hand-held unit is on.

### On Notebook Computer

1. Retrieve UPC\_ADD.DAT file from first data collection unit into laptop:
  - Load Apex Program Generator
  - Open USDA2.MAP
  - File, Retrieve, Application 3, OK — this retrieves the upc\_add.dat from HH to notebook.
2. Append the UPC\_ADD.DAT file to the current master UPC file on the notebook:
  - Load Foxpro Visual 3.0
  - Type in the following commands:  
**DO ABT**  
**USE UPCADD**  
**APPEND FROM C:\APEX\UPC\_ADD.DAT SDF**
3. Retrieve UPC\_ADD.DAT file from second data collection unit into laptop following instructions in step 1, then:  
**APPEND FROM C:\APEX\UPC\_ADD.DAT SDF**
4. Run the UPCADD.PRG program within Foxpro:  
**DO UPCADD**

This will perform the following:

- Remove duplicate records from the UPCADD table
- Update department description and multi-link department number in *UPCADD* table from *DEPTFLE* table
- Copy original UPC number to UPC field



This will perform the following:

- delete duplicate UPC codes in the UPCUPDT table,
- create a link on oldupc between the UPCUPDT table and UPCADD table,
- update/append records into ADDREC from UPCUPDT table,
- create data file APIDATA.DAT for loading into the POS units.

9. Copy C:\APEX\APIDATA.DAT to a:

## Adding Items to Inventory

***\*\* You **must** have a PS/2 Style Keyboard (with NO ADAPTERS) and **should** have a PS/2 Mouse to execute the following sets of instructions. \*\****

From the DOS prompt:

1. **CD\APS**
2. **APS**
3. Put CAPS LOCK ON (all entries in the following screens should be done in all caps)
4. Code: 2 (tab)  
Password: 2 (tab) (Enter)
5. Inventory → Inventory Master File

Here you can search for an inventory item by item number, description, or category. (You can use the tab key to move around the screen to select an item, or if you have a PS/2 style mouse, click on the item you want to select.)

6. Once you find the item you want to change, press **Alt - C** to change an item's UPC code.
7. If you do not find the item in the database, press **Alt - I** to insert the item.
8. Once in the item detail screen, the following fields are important:
  - **Item #:** This is the item number, not the description or the UPC #
  - **Taxes:**
  - **Link SKU:** This is used to link items that will always be "sold" together, like bottle deposits.
  - **SKU #**
  - **Conv. UM = 1**

then press **Alt-N** (for next page)

- **Food Stamp:** This field will show a "Y" if the item is foodstamp eligible. Otherwise, it will be blank.

then press **Alt-P** to return to previous page

then press **Alt-O**, for OK. This creates the item, or adds it to inventory file.

9. Exit from the Inventory Master File
10. Go to Inventory → Enter receipt/price changes (see also p. 85)
  - Insert
  - Enter item number
  - Tab to **New Retail** and type in the price of the item.
  - Tab to OK and press Enter.
  - Exit from this section.

*\*\* Note: You may also want to make any pricing changes while still in this area. See page entitled "Changing the Price of an Item." \*\**

11. Go to Inventory → Post Receipts/Changes

12. Type the following:

Print Price Labels	N
Print Receiving Report	N
Print Shelf Labels	N
Print Show Cards	N
Update Inventory	Y (once to move it to the Yes area, and once again, Y, to select <u>Y</u> es)
Change Register Price	N

(tab) to **OK** - **DO NOT PRESS ENTER YET.**

13. Tab through all fields to fill in the spaces and confirm that it filled in the items the way you wanted them, then tab to **OK** and press Enter. It will then "post" these items to the correct databases.
14. Just to make sure, go into the Inventory Master file and search for the items you just changed/inserted to make sure your changes stuck.
15. Remove CAPS LOCK. You do not want caps lock on for POSALR program. It will lock up the RIVA keyboard.
16. Exit from the APS software to DOS. At a DOS prompt, run the INV.BAT file. This copies all the files you changed to the POSALR directory so you can use them through POS software and automatically re-enters you to the POS Program.